**Doctorate in Professional Studies**

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# **DPS 5260:** The difference in agricultural production cost among European and non – European countries –potato and tomato – market challenges for import-export.

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# Doctorate in Professional Studies

## The difference in agricultural production cost among European and non-European countries – potato and tomato – market challenges for import-export.

**Part II**

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**Summary**

The complicated world of fresh fruits and vegetables commerce has inspired me to proceed with this project. The main topic of this research is the production cost of tomato and potato which are the highest- in consumption -vegetables in the Greek market. The study is focused on Greek production versus rest countries around it (European and non European countries) which export these products under specific circumstances. By stating European countries, it is implied that the countries are laid geographically in European continent and they are included in the European Monetary Union. In non European countries there are either countries that belong geographically to Europe but they are not included in the European Monetary Union. Or countries that do not lay geographically in Europe. Therefore the methodology is divided geographically in two main levels of research:

1. Data collection from Greece where there are focus groups of agronomists, cooperative unions, traders. There's a base of around two hundred farmers who have filled in questionnaires regarding the crops mentioned above.
2. Data collection from rest countries is based from interviews of foreign exporters, local importers – traders, embassies and also from colleagues of the mother company that I am working for.

The questionnaires are structured in such a way to avoid coincidental answers by the interviewed people. The analysis was based on the SPSS statistical program and this has led to several findings:

- Contracted agriculture in Greece may keep production costs low and reinforce the competitive power towards rest countries. In future, it should obviously expand to more crops.
- Low income farmers pay more attention to finding cheap equipment than the rest.
- Most farmers, especially the ones with big lands (more than five hectares per person) make precautionary use of chemicals to protect their crops from plant diseases.
- Young farmers invest more in new technology and equipment than older generations.
- Farmers, who invest in their crop business, believe in the future of biological agriculture.
- The current evolution of biological agriculture in Greece remains lower than the average European one.

- Large production farmers are more professional and they work on economies of scale to minimize their costs.
- The expansion of organic crops in the Greek market can lead to a sustainable level of income for both producers and traders
- Apart from unpredictable parameters like weather, the marketing of agricultural production can fully guarantee positive income.
- The more professional the farmers are the more the investment in their crops
- On a contract basis agriculture, farmers and super markets may become valuable partners

Furthermore, the conclusions of this project can probably lead to future research on the topics below:

- The successful minimization of production cost to contracted potato crops should find application in other cultivations.
- The development of private labels in fresh fruits and vegetables is another exit to large scale Greek agricultural production.
- Once the consumers become familiar with private labels, then the future researchers should concentrate on the evolution of these products.
- The Greek exports should prioritize on the production of competitive, safe and qualitative products. These are the key factors to adapt to the European consumers' demands.
- The typical bureaucracy regarding imports and exports to and from Greece has to be lessened, because it often causes delays to loadings and quality reduction.
- Exports to Scandinavian countries need to be further investigated in future. These countries have the financial ability to pay the added value of products, but they have high quality standards. The risk of rejection and a permanent collaboration break is quite high in such countries, if there is quality uncertainty.
- Commercial challenges among rest countries should also be analyzed in future studies (exports from Fyrom to north Europe, from Turkey to north Europe, from China to Europe and Russia).
- New legislation that eliminates the export barriers from the third Mediterranean countries (Egypt, Morocco, Lebanon etc) should change the balances in the European agriculture.

## CHAPTER 1: INTRODUCTION

This project is a bridge between my previous and future career in terms of actions to be taken. As section manager of fresh fruits and vegetables in Dia HELLAS SA for the last eight years, I've been able to share valuable experience on the international fruit commerce. Very often I face quality issues with Greek production so I'm forced to research the international market. Additionally, in case of reduced production due to weather conditions local dealers try to achieve very high prices. This forces me to reduce the profit margin in my sector in super markets since I have to adapt my retail prices to the competition. This often doesn't allow the same increase in the retail price as in the cost price, so the net profit of perishables is reducing considerably, even destroying the positive results of many previous months' efforts.

In such a case I am obliged to exchange information with both the rest European and non European countries with Dia activity and also the Greek importers. The Greek importers occasionally offer better prices than I can directly get from the foreign exporters and this is always motivating my research of what is the competitive advantage of each one. Every time there will be something new; innovation and investment in new equipment, better predominance in logistics, higher volume and negotiatory power, lower labor cost results in the productive areas.

Although I've had the chance to try many alternative suppliers with aggressive behaviour on costs, I have unfortunately been disappointed by the superficial management of their companies. Once they feel unable to compete in fair terms, they try to attack the other suppliers' business, regardless what the damage to them will be. As a result, they will soon collapse and this way even their customers will suffer from stock outs of the deliveries.

Considerable quantities of fresh potatoes and tomatoes are imported in Greece during the course of each year, once there's lack of local production (low production due to bad weather etc). Prices appear very high to the consumers during these periods, without any logical explanation. Especially during the last ten years, not only from the uniformly European market but also from third countries, we do import in low costs. Even so, the end user still has to pay the same high retail prices as before. In many cases, even the origin of the product is not clear to the customer. Therefore, from the wholesale price of the farmer to the retail price of the consumer, there's a huge margin which is not justified. Prices should correspond to the agricultural income protection, to the dealers' rational profit and to the purchasing power of consumers.

Due to the non complemented- synchronous system of production and distribution in the agricultural area, it may occur very often that farmers crop specific products, based on data of the previous year for prices, availability and demand. So, in case of over availability they cannot dispose the whole production and they collect low prices. The outcome of this study aims at the rationalization of fruit commerce on a win-win basis for all parts involved. Due to the short shelf life of fresh fruits and vegetables, many suppliers provoke damage to themselves once they destroy the market policy. They drop the prices dramatically even before the break even point of their company business in order to avoid the whole damage. Pre-empting the results of our study, there's a big difference in the imported products' prices from wholesale importers to retailers. At a first glance, it seems that there are huge amounts of profit margin in this business. While in reality, the known loss of these products turns up to be the worst contributing factor of the companies' balance sheet. Two basic mistakes are coming up from the surveys on importers. First, they rush all together to import whenever there's some gap in the Greek production. Second, the price war of many, leads them to sacrifice their profitability. Especially the last two years, with the worldwide financial crisis, the economic deadlock has caused many fruit businesses to disappear. The research has also shown that many retail companies lack any long term strategy and work day by day without any medium or long term perspective of their commercial policy. The fresh agricultural products run their own shelf life circle which starts from the farmer and finishes up to the final consumer. All of the above, have to be adapted to the demands of the market they aim at. Only a few, however, turn to know what the potential abilities are and make the appropriate investments. It seems quite confusing, but as shown later on the recommendations, there's really a big gap between initiative and commercial policy in this sector. The future researcher will clearly identify many topics of further research to contribute to this sensitive and volatile area.

### 1.1 The aim and impact of this study to all parts involved

My research deposition is:

"Creation of a satisfactory database of farmers, agricultural equipment stores (private and cooperative unions, importers and central fruit market merchants) in order to clarify the production costs for specific crops. This is to discover the economic threshold of every agricultural business and suggest the marketing mix for the successful survival of agricultural businesses.

The aim of this study is to find out the key factors that underpin the cost price policy of agricultural production in several countries inside and outside E.U.

In my current position:

1. This will reinforce my negotiation skills so I'll be capable to increase the profit of my company and guarantee the duration of the supply chain system.
2. It will integrate and enhance my knowledge about European and non European countries, so I will know from first hand which country will present the best terms for every different product I will have to import.
3. The cooperation between the international department of my company and the Greek subsidiary company will simultaneously be enhanced since they will be well informed with the Greek opportunities. This can take place even now, but it will be more successful if I know in advance the market policy of each country in question.

Regarding Greek farmers and Greek traders the expected benefits are:

1. Knowledge of exports' quality standards in order to minimize rejected quantities.
2. Estimation of the high demand periods in the market, in order to increase the specific production.
3. Price comparison amongst products of other countries can lead to rationalization of production costs. The fear of loosing market share is expected to force the farmers search for alternative cheaper solutions in costs and improvement of their competitiveness. Especially now, that the globalization of markets makes the transportation of goods attainable, both inside and outside the European Union.
4. Traders will get a more clear view of the available Greek production and therefore of the need to import or not.
5. The conclusions of my survey will support Greek importers and traders on the competitive advantage of European and non European countries regarding specific crops. Thus they will have a future base of alternative solutions to support efficiently their companies' needs.
6. The future development of Greek agriculture has to be focused on quality, prices and environmental protection methods. The communal bounties, regarding old European countries like Greece, will stop in 2013, so problems will increase dramatically in the absence of any commercial strategy.

7. The remaining of young people in the countryside will need to change to agricultural poles of attraction. They will not leave their land if they achieve a satisfactory income.
8. The low productivity of Greek land is due to the disorientation and lack of business mentality amongst Greek farmers. These were caused by the national and European subsidizations. From my extensive experience, most of Greek production today has no certification, no brand name, it is solved on derogatory prices without any production contracts or preliminary agreements. The cooperative unions, which were structured on a political basis, have to be reorganized and obtain a business vision. Apart from the distribution of communal funds which will finish in 2013, they worked also for close personal advantages. Through this study they may get useful knowledge to stand alone on the global competitive market through high quality, certified, brand named and high added value production.

The outcome of my research has many benefits to all parts involved. Personally, I expect to improve:

- My knowledge about international fruits commerce and legislation, motivating my attitude towards whole life learning
- My application of learning by doing a project which is relevant to my professional issues with instant implementation of the outcomes.
- Presentation-communication skills: Writing a coherent Learning Agreement and a detailed project together with a successful oral presentation to an expert assessment panel.
- The responsibility and Leadership, since both are obligatory for the quality of the project and the time feasibility.

The stakeholders inside my country (subsidiary office of our international company) will get useful material to guide them through positive and specific seasonal problems. This can create a competitive advantage against other competing companies and establish a strong professional profile. Especially, for the franchise department, it can work as a complementary tool of profit for their expansion activity. So directors may empower their role and corporate image. Last, our colleagues who are giving marketing courses (from the Mother Company) will find an innovative and applicable guide of agricultural problems to enhance their own knowledge.

The University, to my way of thinking, is about to broaden its activity in a new upper coming business that used to be meaningless up to now. The globalization of markets will find viable ground based on the findings of this project, so the effect will

be evident. To sum up, I would claim the minimum profit which will result from this additional resource of information regarding International Marketing of fresh fruits and vegetables, niche markets and marketing mix. Moreover, this could be an opening to further managers from relevant enterprises seeking their career paths beyond Doctorate Studies. As shown on the conclusions (chapter 6) of this dissertation, the certified organic products plus the strong brand name are the ones which will occupy future research in the agricultural section.

## CHAPTER 2: TERMS OF REFERENCE OBJECTIVES AND LITERATURE REVIEW

### 2.1 Statistical data of production of fresh fruit and vegetables in Greece

Potato and tomato are considered the most important dominant vegetables for Greece in terms of the availability of cultivated land and production. That's why this project is focused on the detailed study of these two products. Regarding potato there are normally three different periods of crop (spring, summer and autumn). The total agricultural surface used is about thirty eight thousand five hundred ninety six hectares (38,596) and the total production is nine hundred thirty three thousand five hundred eighty tons (933,580). Tomato on the other hand is taking up fifteen thousand four hundred ninety hectares (15,491) and the total production is about seven hundred thirty five thousand one hundred sixty tons (735,160). As shown on the next table, these two products are using more than the 25% of total Greek agricultural surface in vegetables.

| Table 2.1 | total | | | |
|---|---|---|---|---|
| crop | land (hectares) | production (tons) | % of t.land | % of t. production |
| total potato | 38596 | 933580 | 19.31% | 15.50% |
| tomato for juice | 19575 | 1227832 | 9.79% | 20.39% |
| summer potato | 15763 | 423040 | 7.89% | 7.02% |
| tomato for food | 15491 | 735160 | 7.75% | 12.21% |
| spring potato | 15472 | 348480 | 7.74% | 5.79% |
| watermelon | 14320 | 677935 | 7.16% | 11.26% |
| cabbage | 7411 | 174878 | 3.71% | 2.90% |
| autumn potato | 7361 | 162060 | 3.68% | 2.69% |
| beans | 6503 | 69121 | 3.25% | 1.15% |
| melon | 6440 | 143383 | 3.22% | 2.38% |
| dry onions | 5686 | 157726 | 2.84% | 2.62% |
| asparagus | 4484 | 17966 | 2.24% | 0.30% |
| pepper | 4093 | 125277 | 2.05% | 2.08% |
| zucchini | 3943 | 92840 | 1.97% | 1.54% |
| lettuce | 3879 | 75142 | 1.94% | 1.25% |
| spinach | 3780 | 52384 | 1.89% | 0.87% |
| cauliflower | 3439 | 59637 | 1.72% | 0.99% |
| eggplant | 2708 | 69643 | 1.35% | 1.16% |
| radice | 2455 | 35103 | 1.23% | 0.58% |
| artichoke | 2393 | 22903 | 1.20% | 0.38% |
| cucumber | 2275 | 190587 | 1.14% | 3.16% |
| fresh onions | 2057 | 30356 | 1.03% | 0.50% |
| leak | 1545 | 37024 | 0.77% | 0.61% |

| Table 2.1 | total | | | |
|---|---|---|---|---|
| crop | land (hectares) | production (tons) | % of t. land | % of t. production |
| okra | 1532 | 11234 | 0.77% | 0.19% |
| fresh peas | 1486 | 9606 | 0.74% | 0.16% |
| carrot | 1183 | 37115 | 0.59% | 0.62% |
| dry garlic | 1106 | 9411 | 0.55% | 0.16% |
| parsley | 904 | 21317 | 0.45% | 0.35% |
| broad beans | 895 | 6740 | 0.45% | 0.11% |
| beetroot | 845 | 19112 | 0.42% | 0.32% |
| celery | 781 | 17742 | 0.39% | 0.29% |
| anise | 515 | 9444 | 0.26% | 0.16% |
| strawberry | 431 | 13243 | 0.22% | 0.22% |
| fresh garlic | 317 | 2425 | 0.16% | 0.04% |
| radish | 222 | 3028 | 0.11% | 0.05% |
| **total** | **199886** | **6022474** | **100.00%** | **100.00%** |
| | | | | |
| **Source: Ministry of Agricultural development and food, 2004** | | | | |

The average farmer's prices for potatoes between 2001 and 2008 are the ones below

| Table 2.2 | Wholesale price in Euros/year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| product | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| potatoes | 0.34 | 0.23 | 0.38 | 0.24 | 0.29 | 0.33 | 0.31 | 0.27 |
| | | | | | | | | |
| **Source: Ministry of Agricultural development and food, 2009** | | | | | | | | |

For tomatoes, the above prices refer to both greenhouse and field production. In the case of greenhouse production, prices are supposed to be at a much higher price due to the winter period of production which is usually limited and cannot overbalance the total need. This is shown on the next table:

| Table 2.3 | Avg. farmer's price of outdoor tomato | Avg. farmer's price of greenhouse tomato |
|---|---|---|
| year | euros | |
| 2002 | 0,26 | 0.81 |
| 2003 | 0,37 | 0.78 |
| 2004 | 0,2 | 0.66 |
| 2005 | 0,33 | 0.58 |
| 2006 | 0,25 | 0.62 |
| 2007 | 0,29 | 0.67 |
| 2008 | 0,24 | 0.57 |
| | | |
| **Source: National Statistical Service of Greece, 2002-2008** | | |

The farmers' prices from other countries will be quoted later and there will be a comparison between them. The analysis afterwards will show in which areas costs

can be deducted for the maximization of the farmers' profit. However, it's clear from the last two tables that farmers' prices in tomato and potato tend to decrease during the last six years (from 2002 to 2008). Taking into consideration that the production cost has almost doubled in the last few years while cost of living is always increasing, it is obvious that the net income of this agricultural sector is being dramatically decreased. Below, the main factors of cost price increase from 2005 to 2007 are shown:

| **Table 2.4** | **cost price factors in Greek agricultural section** |
|---|---|
| increase in fuels prices (+41.4%) | |
| increase in fertilizers prices (+32.2%) | |
| increase in seeds prices (+12.3%) | |
| increase in pesticides prices (+9%) | |
| increase in agric. Eguipment repairs (+10%) | |
| decrease in products prices (-10%) | |
| increase in labour cost (+3.8%) | |
| increase in land rent (+1.2%) | |
| increase in agric. Loans interest (+13%) | |
| | |
| **Source: National Statistical Service of Greece, 2005-2007** | |

### 2.2 Selection of countries' shortlist for the analysis

The sample of countries' analyzed, has been based on two parts: first are the European union countries that mainly export to Greece and secondly are the non European countries next to Greece that also export big quantities. By stating European countries, it is implied that the countries are laid geographically in European continent and they are included in the European Monetary Union (i.e. Greece, France, Spain, Poland). In non European countries there are either countries that belong geographically to Europe but they are not included in the European Monetary Union (i.e. Turkey, Fyrom). Or countries that do not lay geographically in Europe (i.e. Egypt), as shown on the table 2.5 below:

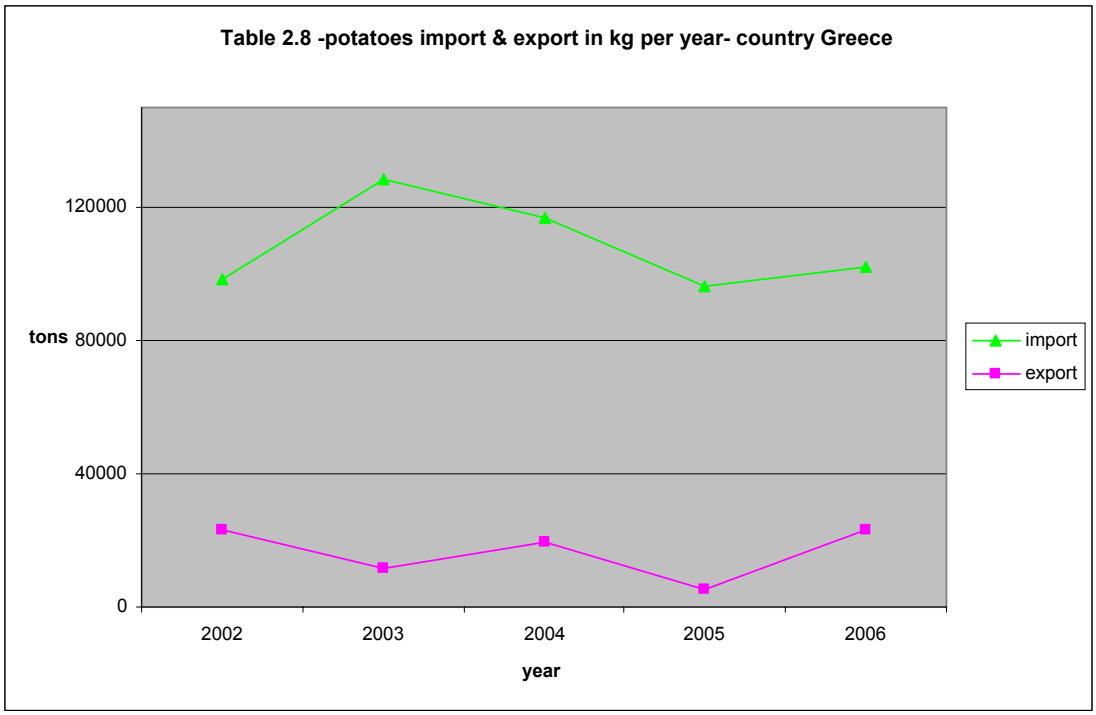
| **Table 2.5** | |
|---|---|
| **European countries** | **non European countries** |
| Greece | Turkey |
| France | Egypt |
| Spain | Fyrom |
| Poland | Scandinavian countries |
| Cyprus | China |

In each country of the above, there is a specific sample frame that has been interviewed. This is shown in detail on table 2.6:

| Table 2.6 | |
|---|---|
| **country** | **sample frame** |
| Greece | farmers, traders, cooperative unions |
| France | traders |
| Spain | traders |
| Poland | traders |
| Cyprus | traders |
| Turkey | traders |
| Egypt | traders |
| Fyrom | traders |
| Scandinavian | Embassy, national statistic service |
| China | Embassy |

The selection of countries above is based on the volume of exports to Greece in potatoes and tomatoes (tables 2.7 to 2.8 below). For the better comprehension of the research, prices of products in chapter 5 (table 5.10), are considered to be DDP (Delivered Duty Paid) in the Central fruit Market of Athens. The main target is the reallocation of Greek production to both internal and external markets. This way, the comparison of Greek and rest countries' production cost, can be done in fair terms (including transportation, customs etc). The high volumes of quantities imported and exported to and from Greece, as shown below, necessitate the importance of such an analysis:


**Source: (National Statistic Service, Eurostat)**




**Source: (National Statistic Service, Eurostat)**

As far as the rest European countries are concerned, the contemplation is based on France, Spain, Poland. Regarding the non European ones with main export activity to Greece, the most representative ones are Turkey, Egypt, Fyrom. Especially for potatoes, the main export destinations to Greece, in year 2006, are:

| Table 2.9<br>country | kilos | % |
|---|---|---|
| **Egypt** | 50,896,710 | 49.81% |
| **France** | 22,561,905 | 22.08% |
| **Germany** | 6,597,142 | 6.46% |
| **Cyprus** | 5,875,969 | 5.75% |
| **Turkey** | 4,834,574 | 4.73% |
| **under equator** | 4,367,700 | 4.27% |
| **Italy** | 3,246,387 | 3.18% |
| **Belgium** | 1,345,619 | 1.32% |
| **Rest** | 2,451,509 | 2.40% |
| **Total** | 102,177,515 | 100.00% |
| | | |
| **Source: National Statistic Service - Eurostat** | | |

The subject of this thesis is solely related to Greek agriculture. Ways are examined to make the tomato and the potato, the Greek horticulture products with the greatest consumption, attain a more competitive position on domestic and foreign markets. To this extent, the countries examined are mainly those that are neighbouring to Greece, and as a rule export the above products to Greece. We could examine other similar countries to Greece (in area and population) such as Holland, which has particularly

advanced agriculture and an international exporting activity. However, this would steer away from the needs of this research, given that products from Holland are not considered quality or price competitors for the Greek market. In general, Greece imports fruit and vegetables from Holland outside season, that is specific products in particular periods when these are not produced in Greece and its neighbouring countries. Thus, Holland's farming products appear only in very small and specific periods on the Greek market, so they are not considered strong competitors of the relevant Greek horticulture products. Moreover, in the periods when these are imported, there is no available alternative product from another country, so prices are set almost in a monopoly.

### 2.3 Literature review regarding fruit trade

#### 2.3.1 The profile of Greek customer

At this point, it's important to make a detailed description of the Greek market, starting from the purchasing behaviour of consumers. This will help us link the consuming habits in retail market with the wholesale price index and the production choices of farmers.

Fresh products of Greek origin, as cheap as possible, are the fruits and vegetables that the Greek housewife is trying to buy for the daily needs. Traditionally, she is used to visit the neighbourhood's greengrocer twice to three times per week for such purchases or even the street market which is still very famous destination. Recently, however, there's an increasing frequency of visits to super markets. Tomatoes, potatoes and green salads are the basic vegetables to earn the customers' preference. Simultaneously, there are new consuming models such as an increase in fresh cut vegetables, organic products, and new species with better and variable tastes as well as "green" products. The last belong to another approach of synchronous agriculture showing respect to the triangle environment-quality-customer (Source: Market research of the central fruit market in Salonika, regarding the profile of Greek customer and his relation with Greek production). The research was done in a sample of eight hundred fifty two interviewees, focused on north Greece (Larisa to Alexandroupoli).

Greeks spend around three hundred seven Euros per month for food. One hundred twenty Euros out of this amount is allocated for fresh products, including fruits and vegetables (f&v). As a result, income is directly related to the volume of consumption (Source: Market research of the central fruit market in Salonika, regarding the profile of Greek customer and his relation with Greek production). So, for the analogy of income and consumption of fresh f&v in 2008, it comes up that a monthly income of around seven hundred Euros corresponds to a consumption of ten kilos in f&v per

month. While once the money increases, the consumption may raise up to fifty five kilos (National Statistic Service of Research, 2008).

An 87% of the consumers claim that they get supplies of their vegetables once or twice per week from the street market, the green grocer or the super market, while the 33% of them insist that before any purchase they search for the best combination of quality and price. There are different reasons to support customers' preference among super market, street market and the greengrocer shop. The first guarantees the convenience, assortment, quality and good prices on a descended order. The second stands for the cheap prices, assortment, freshness and quality. Finally, the greengrocer shop is responsible for quality, freshness and variety and last for cheap prices. The same survey shows that the all customers' choice is based on freshness and quality criteria. A percentage of 60% is searching for Greek products; one out of three is looking for organic ones and 50% pay extreme attention to cost.

As far as for organic products concerned, there is an increasing request during the last years. Their target groups are customers of middle and higher income and educational level, since their prices are considerably more expensive than the compatible ones (source: Market research of the central fruit market in Salonika, regarding the profile of Greek customer and his relation with Greek production).

### 2.3.2 The balance between imports and exports

According to the national statistical service, the local market of fresh fruits and vegetables is more than three billions of Euros and represents a total production of around eight million tons. A part of it is designated to exports, although this section is gradually reduced the last years. The tendency is very worrying mainly through the rapid increase of imports, decrease of exports and lack of interest for reformation of crops. According to data of Export Research and Studies' Institute, many Greek farmers remain rigorist to bounties and they are not orientated to the current agro nutritional model of development (source: national statistic service of Greece, 2009). Furthermore, in year 2009 there was a considerable decrease of exports (-17.5% in fruits and -3.9% in vegetables).

Inside the local market, the distribution channels are very fragile: cooperative unions and private farmers supply either directly the super markets or wholesalers and rest intermediates. These distribute the production to greengrocers' shops, street markets and retail shops before it ends up to the final consumers. An important part of this production is packaged in manufacturing industries (around three hundred industries in the whole Greece). The final product is distributed either by the local retail market or by export to other countries. Such typical destinations are Germany (50% of total

exports) and rest is Italy, Rumania, Russia and Ukraine (source: Export Research and Studies' Institute of Greece, 2009).

However, the international financial crisis in combination with the Greek one has affected a lot the local consumption. In the past the customer was not affected so much by the price factor. On the contrary, nowadays, if the price increases for some product, its consumption is directly reduced and the wholesaler is obliged either to reduce it or to throw away the unsold damaged quantities. The financial narrowness is also stamped at the super markets, even if the consumers tend to make their purchases more often there. The turnover of fresh f&v in super markets is around 6-7% of their total turnover. The trend is increasing every year basically due to the lack of free time and the fast rhythms of living in the in big capitals. For these reasons, the synchronous Greek ladies feel uncomfortable to visit the street market or the greengrocer shop. Indeed they prefer the super market to make all purchases at one visit (Source: interview with Mr Pilidis, representative of small and medium super markets, October, 2009).

### 2.3.3 The most important destinations of export & import

The exorbitant pricing phenomenon, according to customers, is explained by the uncontrollable situation among wholesalers. The wrong communication by the media causes damage in this business (stated in interview in February, 2010). The margin levels are very low and the basic effort of traders especially now under the crisis, is to cover at least their working expenses. Regarding the origin of products in the central fruit market they are mainly local (80%). Geographically the biggest suppliers are located in south Greece, due to the climate. Occasionally in summer, there are also some productive areas in north Greece. Imported products represent around 15-20% of total sales and these are either exotic ones or equivalent imports to Greek products due to lower price or inadequate local quantities (Source: interview with Mr. Stamatiou, President of Salonika central fruit market wholesalers in February, 2010).

Despite the imports, the external commerce is still having a pleonastic balance. The annual value of exports is around nine hundred millions Euros whereas imports are about five hundred millions Euros. During 2004-2008 the commercial balance of fruits and vegetables is pleonastic with an average annual increase of 25.2%. In 2009 the exports were reduced around 9.2% and imports around 12.6%. The biggest export destinations are Germany (21.1%), Rumania (11.1%) and Russia (9.6%). Especially for Russia and Rumania the trend of exports has increased around 40% from 2004 to 2008. The same trend for Ukraine is 133%. It's quite important also that during the general negative atmosphere in 2009, the exports in Albania increased

around 39.3% and in Hungary 26.4%. The main suppliers of Greece to fruits and vegetables are Italy (market share 23.6%), U.S.A. (10.3%) and Argentina (10%).
Specifically for vegetables, during 2004-2008 there is a commercial budget deficit of around 84.9 million Euros. The exports' trend is increasing during this period about 6.3% while imports increase is 4.5%. During 2009 the vegetables exports were reduced 12.4% and imports around 5.1%. Germany is the biggest client in exports (50%) and Italy is the follower (10.7%). In 2009 there was a considerable decrease of exports to Germany (-19.4%) and Rumania (-18.8%). Rumania, Bulgaria and Czech are supposed to have positive perspectives for the exports of Greek vegetable section. The average trend of exports increase in these countries during 2004-2008 is 45%. In terms of imports to Greece the most important vegetables suppliers are Holland (14.3%), Egypt (13.5%) and Germany (10.2%), (Source: *"Food and Drink"* magazine, September 2009, pp. 36-37).

### 2.3.4 Distribution through super market chains

The distribution channels in Greece have changed a lot during the last twenty years, once the multinational hypermarkets entered the retail market. The biggest super market chains have already abolished any intermediates from the supply chain. They turn directly to farmers in most of the cases, which guarantees a competitive advantage of price. The new elements of commerce are the ones below:

- concentration of promotions
- specialized wholesalers
- selected suppliers
- private models of certificate (Eurepgap)

Practically this means that super market chains implement some type of contract base agriculture. They define to the cooperated farmers all standards of quality and control.
The current situation in Greece is actually what is happening for many years in north Europe countries. 70%-90% of fruits and vegetables sales in France, Germany, Holland, U.K. and Scandinavian countries is done by big retail chains. Discount super markets do also play an increasing role in sales. Their market share in Germany, for instance, is 51% . (Source: *"Food and Drink"* magazine, June 2009, pp. 24-25).

### 2.3.5 Two main causes of confusion to customers

There are still two basic issues to analyze before ending up to farmers questionnaires. First is the attack that fruits and vegetables constantly receive by the

media about expensive prices and second is the “baptism” of different origins of imported products to Greek. They both create confusion to customers and many times affect the consumption dramatically (Source: Kouremenos A. and Avlonitis G. -1995- *“The changing consumer in Greece”,* International Journal of Research in Marketing, Vol. 12, No. 5, pp. 35-48).

The hyperbolic scope of media is clearly understood if we analyze in real Euros the situation. The average consumption of a Greek customer on a year basis is 244.8 kilos of fruits and vegetables (143.76 kilos of fruits and 101.64 kilos of vegetables). The average retail price is 1.63 for fruits and 2 Euros for vegetables. This means that he spends annually 437.61 Euros ((143.76 x 1.63) + (101.64 x 2)). So on a weekly basis he spends 437.61/52 = 8.41 Euros. It’s obvious that 8-9 Euros per week is not an issue at all for any Greek habitant. Such incorrect publicity has forced government to create the prices observatory for fruits and vegetables, while on TV we often watch several “specialists” expressing their opinions about price policy of fresh products (source: The German consuming organization “Gessellschaft fur Konsumforschung”). This research was done in 2004 and for the accuracy of estimation we have considered that in Greece, prices and consumption are even 20% higher than the real ones of Germany. It seems that some solidified ideologies frustrate the specialists to have the other view on this topic.

The second factor of confusion to consumers is the common phenomenon of baptizing the origin of the products. Either potatoes from France, Egypt etc or tomatoes from Poland, Fyrom are baptized to Greek and this way dealers try to earn the added value of Greek production. The problem has the following negative aspects:

- All involved parts in this change of origin try to earn unrealistically high profits.
- There are many contraventions regarding taxes, market, quality and further rules of European legislation.
- The consumer is misled by the deliberate encryption of the geographical origin of goods.
- The final retail price increases dramatically and illegally. Therefore, the financial encumberment of consumers is getting worse.
- The real Greek products remain unsold as their substitutes appear in the market.

For this reason, the ministry of agricultural development has changed the legislation related to transport and distribution. Origin and quantity of the product must be

obligatory mentioned to all invoices starting from the field of farmer till the end user (Source: DALTEX SA, export company in Egypt, 2008).

### 2.3.6 The relation between farmer and agronomist

The universal evolutions that take place in the agricultural sector commerce make the Greek farmer feel weak. He is missing the clear design and target. He is also feeling indifferent and distrustful to any changes suggested. He can hardly trust anybody: the country, the trader, the agronomist, even syndicated capitularies like cooperative unions. This general crisis of reliability frustrates development. The agricultural syndicate representatives usually create opposition just to justify their occupation. The solutions they suggest are not based on entrepreneurship but only on protectionism.

The distinction of roles between syndication and associative movement has not yet been clarified to their staff. These occupations should be beyond any political partisanship for the common benefit of all farmers. Most government-employed agronomists have only bureaucratic duties irrelevant to their studies and this has gradually undervalued their consulting role. The ones who are about to retire are no longer motivated to offer research and further services and government should examine the issue of new employment positions as well as research sources. The private agronomists on the other hand were obliged to undertake all responsibilities (consultants, experimenters, traders and credit stores). They try to survive with very hard competition, they are forced to lose profit margins in order to keep their clients and they realise their job is replete. The fear of losing sales has made them react to new market demands like organic crops. As shown below in next section, although organic crops have gained big market shares in the last years, still many private agronomists are opposed to them and claim that the difficulties in chemical protection make these crops inexpedient. Actually, they have tried to rescue sales of chemicals but they have to see the future of organic equipment. Although they complain about their job circumstances, they still refuse to try to expand and distinguish their roles (Source: "*The agricultural technology"* magazine, December 2006, pp. 25-28).

### 2.3.7 The current situation and tendency in the international fruit trade

The interviews with traders, cooperative unions, importers and exporters have shown all current problems in trade and therefore what should be taken into consideration for future development. The globalisation of markets has led to the rapid increase of international competition. Local societies that have not worked on their restructuring usually cannot resist the market pressures. This is the case with Greece, which

clearly has to change its strategic planning from competing for price to competing for quality (Source: Output from the analysis in chapter 5).

The giant super markets that expand their business through mergers and amortisation against the traditional greengrocer also bring about a change in the trading process. Almost 80% of the trade of fresh fruits and vegetables throughout Europe is distributed by super markets. The top 15 brands of these represent 90% of sales in the European market. The same problem is also clear within the supplantation of street markets. These tend to become traditional routes for walks rather than a daily purchase destination. The modern way of life brings more and more households to the super market in order to save time. This is especially true today since many people now work till late every evening.

The direct result of this is the elimination of bulk sales which used to provide the customer with the ability to select goods. The most important item however is the replacement of personal contact with the neighbourhood greengrocer by the faceless relation with the brand name. This is the new fashion that customers look for in the pre-packed fresh products of super markets. Additionally, there's a big change in customers' needs and these are based on the changes of their nutritional habits. They are more focused on the protection of health and the environment. That's why they mostly seek natural and safe products without dangerous levels of chemicals (Source*:" Food and Drink"* magazine, pp.34-39, 2010).

All products have to reflect freshness. The case study of the tomato is very typical, especially during the last few years, after the domination of long-life tomatoes in the European market. The permanent demand of consumers for guaranteed freshness led seed companies to new varieties. These carry the pedicel together with the product and the deep green colour certifies fresh quality.

The market also has to adapt to new products like tomatoes in different sizes, shapes and colours or potatoes for different cooking uses. All these have to fit conveniently into the fridge. The cost of living has increased and the large family packages turn to be inexpedient for today's small households. Small packages are more common and the different family structure contributed to that (fewer children, single-parent families). The available time for cooking has been reduced so vegetables today have to be easy and quick to cook. The same trend has increased the consumption of fresh salads. It is clear that the old farmers' tradition of "these are the products I know how to grow and so these should be preferred by the consumers" is not applicable any more. The model "this is what I know so this is what I should produce" has to be changed to "this is what the consumer asks for, so this is what I should produce".

After all, this new tendency has also affected all seeding companies. Their R&D departments search for new varieties according to the demands of retailers and customers, not according to the producers. It is obvious that there's lack of appropriate marketing and financial analysis before any production planning. Such a schedule should consider the customers' preferences, the competition, the commercial policy of super markets, and the added value in fresh products in the development of new products. The trading consultants of the embassies cannot support the mutual exchange of information to the traders directly concerned. It is necessary to create a new channel of information processing and distribution back to the farmers (Source: *"Retail Today"* magazine, edition 9, 2009).

The contracted agriculture, which is a signed commercial agreement between farmers and traders, seems to be the new tendency and perspective internationally. Furthermore, contracted agriculture with certified production systems seems to be a market demand. It guarantees the production and trade of qualitative and safe goods, but at the same time it consolidates the rights of the farmer manager of agricultural production. Its successful planning, however, requires well-trained framers with a business and collaboration mentality (Source: project findings in chapter 5).

The auction halls, which traditionally work within the cooperative unions, have totally lost their place in modern market tendencies. These areas used to be an intermediary between the trader and the producer. Their target was to protect the interests of both. Unfortunately, these areas have ended up as temporary storehouses of vegetables. The auctions (deposit of written offers) take place in ambiguity and this situation allows tricks from all parts involved. As a conclusion there's a big price gap between producer and end user. This problem leads to imports from third countries and the debasement of Greek production. Many examples from other countries indicate that modern auction halls are equipped with packaging and calibrating machinery. This gives added value to fresh produce. In addition, they have created unions of farmers in order to gather sufficient quantities for their market demands.

Greek exporters face a great difficulty in price stabilisation. Most of their foreign customers need weekly stable prices before proceeding with any agreements. On the contrary, in the typical auction halls of tomato in Crete, prices change on a daily basis according to availability and demands of the Greek market. Therefore the Greek exporter cannot achieve stable prices and quantities for a whole week, as the other European competitors do. This leads to lack of interest and decreased exported quantities (Source: interview with the cooperative Union of Tympaki, Crete).

In fact, many farmers as well as exporters store their products in order to sell them later and achieve better prices. That's why the quality is degraded when the products reach the end user. Our competitors gain bigger market shares in foreign markets because they have worked on this project of freshness. Besides, the foreign super markets realise this Greek drawback for direct delivery and longer lead time (time from order to delivery) so they are basically focused on production from other countries. The Greek production is just used complementarily to support their needs.

The outcome is that Greece does not have a clear export locality. Traders often look for temporary profit and ignore the perspectives of a permanent partnership. They treat exports randomly, according to the circumstances of the domestic market. They turn to exports only in case of low domestic prices so their foreign partners cannot maintain long-term relations and the partnerships break easily. Another active problem in the cooperation between Greek export companies and international super markets is the small size of the former. There are no export companies which gather sufficient quantities for the weekly needs of a foreign chain. Although these customers stably grow through mergers and acquisition, in Greece most companies still work without coordination and in competition among them. This situation frustrates the direct cooperation of export companies with foreign super markets. The latter search either for wholesalers or for local importers in their own country to make purchases. These people group quantities for their customers, they make sales to the super markets themselves and usually broaden the price gap between producer and consumer (Source: interview with George Zachariadakis & Co, Crete).

In the Greek market, the local production is often under pressure by imports from other countries. Potatoes from Egypt or tomatoes from Turkey and FYROM usually appear in the local competition and decrease domestic prices. The inability of governmental authorities to perform full quality and origin control in these products creates a big mess in the market. Many times these imports are "baptized" as being of Greek origin, enjoy high prices and furthermore defame Greek quality. The latter is also related to the packaging of the product. Unfortunately, many agricultural products are still distributed in bulk in several box sizes without any clear origin tags. The lack of product identity creates confusion to the customers and facilitates commercial games regarding origin changes from other countries (Source: "*Fruit news"* magazine, 2008, pp. 41-42, edition 8).

Although the quality issue is considered a one-way direction for the future, research in after-harvest manipulations is still not applicable. A consultant in such issues needs to be activated. They have to follow modern tendencies and suggest solutions. Emphasis on quality also means that the maximum residue levels (MRLs) are

consistent with European legislation. There's a worldwide demand for safe and healthy products. However, journalists very often exaggerate and create confusion to customers. As a result the big super market chains decree new MRLs which are much lower than the European legislation. They try to increase their loyalty but in the end they create problems to the farmers' base and confusion to consumers about food safety.

The certification of production is essential for the worldwide trade. One typical approach is the integrated crop management. All certified chemicals are allowed, but rationally; this means at the appropriate dose and timing according to the manufacturer's directions. The success of such a model is linked to the mentality change of people in terms of respect to farmers, consumers and environment. The forecast for demand of certified fruits and vegetables in Greece is positive. Once the Greek customers demand it, all retailers will be adapted to the certified-only model of production. Nowadays however, there's still conventional production in retail market and only some high brand retailers offer the alternative line of certified fresh products. This means more space for more products and therefore additional costs for the retailers (Ref: *"Agricultural Technology"* magazine, December 2006, pp.29).

There were too many certification models worldwide but unfortunately not all of them were acceptable by the international markets. Many exporters lost sales due to unawareness of their certification brand. The multiplicity of protocols creates a mess for customers also as well as additional expenses to producers. However, the creation of a common worldwide acceptable protocol does not seem achievable yet. Under such circumstances, another mark of quality could cover this gap. The example of protected origin products offers a traceability of origin and quality together.

Apart from the problematic auctions that take place inside the cooperative unions, we have also noticed further operative irregularities that keep them isolated from other competition. Only a few expectations of the cooperative unions' members have materialised. The reasons are mentioned below in detail:

1. They are mostly trapped in the cost reduction mentality which is the lower margin in agricultural equipment than the private stores of agronomists. They have generally ignored the issue of manufacture and trade of agricultural production. This should be their priority and it is where they have to focus in the future. Actually, the research of farmers' cost makes it clear that the price differences in equipment between cooperative unions and private agronomists' stores do not set a strong competitive advantage in the final cost of production. Furthermore, the scientific advice that private stores offer to

agriculturists is much more important in value than the little reduction in cost. Most farmers in our research agree that the innovation and new technologies offer more value to their business and this knowledge is almost exclusively distributed by private agronomists.

2. They suffer from the lack of marketing specialists and of specific targets. So their duties are limited to the marketing of bulk products without specification of their brand (variety and quality). Considering that the greater part of European subsidies is provided through these unions, their staff spends a lot of time in bureaucratic issues and not in the scientific approach to their job.
3. They are usually stuck in easy solutions like sales of agricultural equipment and creation of super markets. They don't pay attention to market research, packaging and trade of their own production. This is why they show delays in progress.
4. Their aim was to do more or less everything, without any business orientation. They developed a public sector mentality and they ignored the cost and the quality of their service. They became ineffective in competition and this has threatened even their own existence. In some cases they have lost reliability and support from their own members.
5. There is a real need to change mentality in the cooperative unions and make specialised models per family of products. It is also important to establish better cooperation and relation with the market of their products. The farmers' union is a new fashion that started twenty years ago and represents the best effort to program the harvest and its distribution. This trend still has not been developed enough since the total percentage in Greece is only 11% while in the rest of the European Union about 40% of cultivators are united in such groups.
6. The certification of agricultural production is necessary for the reinforcement of sales. In the recent future however, the forecasts claim that almost all products internationally will be certified. Therefore Greek production has to be supported by an additional comparative advantage to dominate in the global markets. The cooperative unions in each geographical area probably have to support another quality mark which may be linked to this productive area. Any additional specifications that clarify the whole procedure from cultivation to consumption and support any product quality improvement have to accompany this mark. For instance, Cretan tomatoes or potatoes from Nevrokopi (northern Greece) can be ideal cases for such a mark. This way the consumer can distinguish the product among many others and probably

choose it. There are many advantages of such a mark, like increased market share, safety for the producer and the trader. Even so, it requires some time and investment in advertisement till it becomes known to the customers. These quality marks have to be legally patented to offer added value to the proposed production (Source: *"Agricultural Technology"* magazine, December 2006, pp.30-33). .

### 2.3.8 Legal issues that affect the world fruit trade and prices

In this section, we present our speculations about the legislation applicable to the world fruit trade. The commercial rules and the changing legislation regarding pesticides are considered important factors to affect the agricultural products' prices too. As long as new countries enter the European Union and more third countries enter the world fruit commerce, new legal rules are agreed upon to regulate the commercial balances. Some of these rules can injure the rights of some countries and they might simultaneously defend some others. The ideas mentioned in this section express mostly businesses in the fruit industry who are already engaged in the world trade.

Furthermore, the implementation of the new European legislation about plant protective products, is expected to increase agricultural products' prices. The main causes for this increase are two: the reduction in alternative chemical choices and the reduction in production. In units 2.3.8.1 and 2.3.8.2 below, these factors are described in detail.

#### 2.3.8.1 New legislation on imports from non European (non E.U.) Mediterranean countries

From January first, 2010, all taxes and further charges regarding the distribution of agricultural products among the 13 countries of Mediterranean zone have been abolished. Such legislation is expected to improve the fresh produce trade of Egypt and Turkey. On the contrary, many Greek products are about to suffer big damages. However, many importers claim that there won't be any considerable changes since it was always compulsory for a minimum tax amount to be paid. In more detail, they allege that this law will only simplify imports from other Mediterranean countries. The Greek Minister of Agricultural development emphasised the creation of quality and famous brands through the increase of biological crops and further certification in agricultural production. He also spoke about the Mediterranean diet and he invited all

countries to expand this advantage which is not only healthy but also a dietary civilisation model which has been tested through the years.

The new commercial agreements between the European Union and other Mediterranean countries open the barriers for exports from the last ones. On October 2009 the agreement between the European Union and Egypt was officially signed. The same agreement also involved Israel and Morocco. In the same spirit, this legislation allows many rights to these countries on agricultural exports with no actual equivalent benefit for the European agricultural section. The basis of this agreement is that the exports of fruits and vegetables from Morocco are totally liberated. No taxes and quantitative eliminations are applicable any more for almost all fresh fruits and vegetables. Only six products are excluded from this rule: tomatoes, zucchini, cucumber, garlic, mandarins and strawberries. However, in these cases the new legislation allows more quantities to be exported than before. In tomato, for instance, the previous law allowed the annual export of 185,000 tons. The new one allows about 257,000 tons gradually till 2013. Practically, this is an increase of 39% within three years.

Regarding zucchini, the exported quantities by the new law are doubled (from 25,000 tons to 50,000 tons) while in the case of cucumber they are tripled (15,000 tons instead of 5,600 tons today). A 35% increase is also implemented for mandarins which reach an annual export quantity of 175,000 tons (instead of 130,000 tons today). Garlic also increases from 1,000 tons to 1,500 while strawberries increase to about 4,600 tons in April and May. These months are extremely sensitive for the European strawberry producers since they normally reach the peak of their output.

In other fruit the legislation is even harder for European farmers. In citrus fruit, peaches, apricots, nectarines, cherries and grapes the restrictions for exported quantities have almost been abolished. There's no limit to exports any more apart from the minimum import price (entry price) which was always compulsory for the importers. However, the new entry price is 30% lower than before.

Nowadays Morocco is a significant fruit supplier of European Union. Last year the country's exports in fresh fruits and vegetables reached the volume of 958,141 tons. The main export species were tomatoes, beans, potatoes, peppers, zucchini, citrus, melons, strawberries and table grapes. In fact, in the case of Morocco tomato, the imports from the European Union have increased 60% during the last five years. The quantities have increased from 191,310 in 2004 to 305,542 in 2009. Actually, from October 2008 to June 2009 (nine months period) the total tomatoes export from Morocco has reached 355,495 tons (Source: Eurostat, 2010).

Such an agreement, together with the one signed with Egypt and Israel, is expected to cause several side effects for European fruits and vegetables. It's quite strange that, although the European Union faces hard financial problems, it seems to ignore the future of its agriculture. In an effort to reinforce benefits and rights for third countries, it provides them the ability to make free exports to the European zone.

Another new agreement with Israel opens the way for exports of many agricultural products. In the past there were two protective measures for European products: the timing and the quantities of Israeli exports. In the case of potatoes, in the past there was a restriction of import quota to 33,963 tons between the 1st of January and the 30th of June. The new law keeps the dates of imports but totally abolishes the quotas and further taxes. In tomatoes (variety cherry) the prevision for quota refers to almost 28,000 tons which will be imported without any taxes too. Further products proposed to pass on the quota without any taxes are table tomatoes (5,000 tons) and cucumbers (1,000 tons annually). Peppers will be totally free of taxes to the maximum volume of 17,248 tons. For larger volumes the taxes will be 40% less than in the past. Reduction of taxes is also expected for oranges, mandarins, melons and strawberries. Especially for oranges, the importers have to comply with the European entry price. For zucchini, the "free from tax" import period lasts from December 1st to February 28th. For table grapes, this period lasts from April 1st to July 31st. Similar tax flexibility applies to the imports of flowers.

All these decisions belong to the connection agreements among the euro – Mediterranean countries which have started since July 2000. The official decision maker is the European Commission which is the authorised representative of the 27 European members. It's quite strange, however, that the Commission first makes the decisions and then asks the other member countries to sign it. This is not meant to accuse the European mechanisms but to alert the member countries to their rights, apart from their obligations. The agricultural ministry of each country should examine separately the pros and cons of any transaction with third countries. On the long term basis, the European agriculture has to find the balance for them.

Surprisingly, the key players in the European agriculture like Spain, Italy and Greece have not yet reacted at all to these agreements. It's obvious that these measures will reduce European production in the future due to the lower production cost, unless, Europe is focused on added value production. Europe should work on this balance in time; otherwise the significant problem of agricultural unemployment seems to be inevitable.

#### 2.3.8.2 New legislation on pesticides

The expected increase in agricultural products and food prices will reach 70%, in case of implementation of the new European legislation about plant protective products. The main causes for this increase are two: the reduction in alternative chemical choices and the reduction in production.

This is the basic conclusion for the research of Eurocare union which took place in charge of the European Plant Protection Union (ECPA). If the European Union restrictions on pesticides are enforced place, then the retail prices of potato and wheat will increase by about 20%. Such a future evolution threatens Greece too. The Union will be forced to make imports from third countries, outside Europe, for many basic agricultural goods. Besides, the additional cost will be transferred to the consumers and the price index. According to Eurocare, many important tools of plant protection will be abolished under the new legislation and this will lead to a drop in production. The CEO of ECPA Mr Friedhelm Schmide claims that all crops need protection from plant diseases. If the available tools are reduced, then field outputs will be reduced and prices will go up. The study concludes that the abolishment of plant protection choices will burden the consumer's pocket, especially during a financial crisis when the stability of living cost is vital for all communities.

As a result of the above, the ECPA is asking the European Union to make independent evaluation of the consequences of the pesticide approval criteria (cut-off criteria). In addition to this study, a second one from the Italian research centre Nomisma claims that the European production of wheat, potatoes, cereals and grapes will be similarly reduced by 29%, 33%, 20% and 10% by the end of 2020.

The chemicals turnover in Greece has stably decreased during the last years. The total value of this market in 2004 was 199.3 million Euros. In 2005 it was 184.6 while in 2006 it was reduced to 155 millions. This is a decline of 22% within two years. The main reasons for this drop are the ones below:

- Disconnection of European subsidies from the production volume, according to the new Common Agricultural Policy.
- Implementation of new rules for a future agriculture connected to the environmental protection.
- Decline of the general turnover of Greek agriculture
- Illegal imports of chemicals, without any quality standards, from non European Union countries.

The plant protection chemicals are necessary for the security of crops and their yields. However, the irrational use and the existence of toxic materials in the past

have led to undesirable side effects to the crops, the cultivators and the consumers of agricultural goods. For this reason, the European legislation has resettled some rules for new chemicals which will be friendlier to the environment, to the farmers and to the end users. During the last years these rules became even stricter on the production of plant protectors. The manual of Good Agricultural Practice describes in detail all these procedures and it suggests the rational use of chemicals to all farmers.

The future challenges for chemical manufacturing companies are huge. New options on the agricultural horizon have forced these companies to cooperate with Hellastat for the activation of this survey. The most important challenges for the future of Greek chemical companies are the ones below:

- Companies have expanded to suitable products for biological agriculture.
- The international progress in technology and science allows innovations that improve the products and the treatment of crop diseases.
- The R&D departments of many multinational companies have created new seed varieties, compatible only with specific pesticides produced by these companies
- The institution of common levels on MRLs in all European Union countries will simplify the intercommunal trade.
- A specific increase has recently taken place for olive crops, trees and glasshouse plants (generally cultivations with better control of diseases).

All the above speculations should clearly concern future researchers. The agricultural issue seems too complicated since there are many factors that simultaneously affect developments on a daily basis. This study is a focused effort to isolate the diachronic problems of Greek agriculture with emphasis on the most important vegetables for the country, tomato and potato.

To summarize, we would refer to the similarities of problems that came up for more crops. The basic structural problems are of the same importance, regardless of the crop species. Even so, marketing analysis needs separate approaches per product, because the parameters that affect market positioning are varied and changeable. In the current global marketplace, without any national borders, adaptation of technology, innovation, marketing analysis, strong public relations and, lastly, continuous training are considered essential factors for a company's welfare, as shown in the conclusions (chapter 6).

### 2.3.9 The research statement and research questions

One big part of the data was collected through quantitative research (questionnaires) and the rest through qualitative research (interviews). The suggested approach was Action Research (AC Nielsen (2004), "Quantitative research for the section of super market") and this had to be applied to

- The members of cooperative unions in order to get feedback about their production cost. These unions are non profiteering semi- public organizations that work supporting the farmers' rights. They keep some taxes from farmers' production and the main target is to provide equipment on the lowest cost basis of the market.
- Merchants (importers-exporters) to check out the real cost they buy one product and its declination from one country to the other.

The Action Research cycle had to follow the steps below:

1. Ask questions about cost of total equipment (seeds, fertilizers, pesticides used for the same crop per hectare). Also the rest cost factors (taxes, transportation) that a merchant has to pay for an import.
2. Collect data from the several interviews. In Greece I was in charge of these interviews while in the rest countries I needed the help of my colleagues from the local subsidiary companies.
3. Analyze the final outcome and specify the cases that seem to appear great unreasonable contradictions, e.g. average cost of tomato production among Greece and Turkey.
4. Formulate the hypothesis: "the agricultural cooperative unions are the base of the lowest cost price for the farmers regarding seeds, fertilizers and pesticides"
5. Plan action steps depending on whether each hypothesis is becoming true or false.
6. Positive action for change- This is actually a summary of all the observations and results coming from interviews (Source: Parasuraman, A., Grewal, Dhruv and Krishnan, R. -2004-, *"Marketing Research",* Houghton Mifflin Company)

However, I must confess that I was running the risk not to receive true information by the focus groups of merchants due to obvious interpersonal contradictions. Perhaps, they wouldn't be amenable to discuss on open conversation and betray their negotiatory secrets to opponents. In such a case, I was turning to personalized interviews. On the contrary, there was no similar problem with the cooperative unions, since their mission is to expand the farmers' base by means of minimizing their expenses. Especially, nowadays that the international legislation forces

agricultural methods to a human oriented approach, the rational use of chemicals to protect health is considered vital. From this point of view, unions have already realized that their future survival is connected to the protection of agricultural income. The rationale justifies their involvement in this study for the shake of cost reduction and not of the chemicals sales increase as unfortunately most private agronomists still believe in.

My intention by placing the interviews was quite simple; this was to investigate through all alternative methods of agricultural production cost, the following issues:

1. What is the minimum price that a farmer can sell his product and remain beneficial as a company/ trader?
2. What is the actual price that farmers are finally being paid.
3. What do merchants claim about the price they pay farmers and whether they are making exorbitant margins. If so, what alternatives should be implemented to create economies of scale?

## CHAPTER 3: METHODOLOGY

### 3.1 Introduction

The search for the epistemology and methodologies to be applied to this project was complicated and was intended to provide accurate and objective information. The main difficulty was due to the variability of the fruit trade and the peculiarities that determine the transactions in each country. These factors justify the various reasons for which merchants and farmers might provide wrong information. Such reasons include the fact that they don't have a clear picture of the situation, or that they don't realise that the results of this study will also benefit them in the future.

So, the final approach had to be organised in such a way as to minimise subjective answers and obtain clear feedback from the interviewee. Taking also into consideration the fact that fruit producers are usually people of a low education level, with less experience in international trends and market globalisation, I had to provide a functional approach to make them feel comfortable and gently discuss their point of view.

### 3.2 Epistemology

At this point, I would like to provide a few definitions taken from the international literature on epistemology and explain how they will be used effectively within the current study.

- "Epistemology is the branch of philosophy that studies knowledge. It attempts to answer the basic question: what distinguishes true (adequate) knowledge from false (inadequate) knowledge? Practically, this question translates into issues of scientific methodology: how can one develop theories or models that are better than competing theories? It also forms one of the pillars of the new sciences of cognition, which developed from the information processing approach to psychology, and from artificial intelligence, as an attempt to develop computer programs that mimic a human's capacity to use knowledge in an intelligent way. When we look at the history of epistemology, we can discern a clear trend, in spite of the confusion of many seemingly contradictory positions. The first theories of knowledge stressed its absolute, permanent character, whereas the later theories put the emphasis on its relativity or situation-dependence, its continuous development or evolution, and its active interference with the world and its subjects and objects. The whole trend moves from a static, passive view of knowledge towards a more and more adaptive and active one". (Heylighen F., 1993 – http://pespmc1.vub.ac.be/epistemi.html).

- In terms of religion, “Epistemology, in a most general way, is that branch of philosophy which is concerned with the value of human knowledge.The name *epistemology,* is of recent origin, but especially since the publication of Ferrier's "Institutes of Metaphysics: the Theory of Knowing and Being" (1854), it has come to be used currently instead of other terms, still sometimes met with, like applied logic, material or critical logic, critical or initial philosophy, etc. To the same part of philosophy the name *criteriology* is given by the authors of some Latin textbooks and by the Louvain School. The exact province of epistemology is as yet but imperfectly determined, the two main views corresponding to the two meanings of the Greek word *epistéme*. According as this is understood in its more general sense of knowledge, or in its more special sense of scientific knowledge, epistemology is "the theory of the origin, nature and limits of knowledge" (Baldwin, "Dict. of Philos. and Psychol.", New York, 1901, s.v. "Epistemology", I, 333; cf. "Gnosiology",I,414); or "the philosophy of the sciences", and more exactly, "the critical study of the principles, hypotheses and results of the various sciences, designed to determine their logical (not psychological) origin, their value and objective import" ("Bulletin de la Société fran¸aise de Philos.", June, 1905, fasc. no. 7 of the Vocabulaire philosophique, s.v. "Epistémologie", 221; cf. Aug., 1906, fasc. 9 of the Vocabul., s.v. "Gnoséologie", 332). The Italian usage agrees with the French. According to Ranzoli ("Dizionario di seienze filosofiche", Milan, 1905, s.v. "Epistemologia", 226; cf. "Gnosiologia", 286), epistemology "determines the objects of every science by ascertaining their differentiating characteristics, fixes their relations and common principles, the laws of their development and their special methods". (http://www.newadvent.org/cathen/05506a.html).

Epistemologists generally recognize at least four different sources of knowledge:

- **INTUITIVE KNOWLEDGE** takes forms such as belief, faith, intuition, etc. It is based on feelings rather than hard, cold "facts."
- **AUTHORITATIVE KNOWLEDGE** is based on information received from people, books, a supreme being, etc. Its strength depends on the strength of these sources.
- **LOGICAL KNOWLEDGE** is arrived at by reasoning from "point A" (which is generally accepted) to "point B" (the new knowledge).
- **EMPIRICAL KNOWLEDGE** is based on demonstrable, objective facts (which are determined through observation and/or experimentation).

Research often makes use of all four of these ways of knowing:

- **INTUITIVE** (when coming up with an initial idea for research)
- **AUTHORITATIVE** (when reviewing the professional literature)
- **LOGICAL** (when reasoning from findings to conclusions)
- **EMPIRICAL** (when engaging in procedures that lead to these findings)
  Nevertheless, this last kind of knowledge, empirical knowledge, is what most modern research in TESL and language acquisition aims to establish. That is why we call it **empirical research**.
  (http://linguistics.byu.edu/faculty/henrichsenl/researchmethods/RM_102.html)

In my case study, all the above types of knowledge have been used, but mostly authoritative and logical knowledge, as described in the methodologies below.

### 3.3 Methodology and research approaches

1. The suggested methodology is due to my effort to cover all possible aspects of the project. Due to its range, I needed a combination of both fieldwork and deskwork. The first attempt was to gather all the information needed for the analysis using personal interviews, questionnaires and focus groups. Even in public agencies (ministry of Agriculture, National Statistical Service) and Universities the literature search had to be systematic. Any relevant article could be valuable and lead to the successful choice of questions, meaning the most essential ones. Afterwards, I had to do the deskwork. The quality of data had to be good enough to depict, analyse, research and present new conclusions. Besides, the results of analysis in SPSS agree with other sources and material in the literature.
2. Qualitative research is the non-numerical approach to the problem. These data could afterwards be quantified by counting, for instance, the number of times a certain word was repeated in the interviews. The difficulty, however, was that I was responsible for deciding the range and depth of the information to be obtained. This has created another dilemma: whether or not to include quantitative analysis together with the qualitative, in order to maximize the accuracy of results. Also, I had to isolate the most significant issues, to find where they are applicable and set the basis for further future research.
3. Quantitative research, on the other hand, involves the numeric form of data. It's quite difficult to determine which is best of these two, but my project made use of them complementarily. The survey and questionnaire are typical

examples of quantitative research. I used them for the different groups I was examining. I believed that, in this way, I would obtain the maximum knowledge from the specific target groups. Especially the questionnaire contributed to approaching farmers more easily, because of their lower education. Here, of course, I had to examine the phrasing of the questions. They should be tangible and force them to provide clear answers.

4. Action research is an integral part of the thesis, considering the different countries that I needed to get data from. Unlike conventional research which requires objectivity and attempts to understand causes and situations, here I had to pursue the following route:
    a. Identify the problem
    b. Suggest proposals for action development and action planning
    c. Select action steps and formulate the hypothesis for testing
    d. Plan data collection
    e. Gather evidence or data

    This might seem quite impossible for the other countries. However, my linchpin is the activity of Mother Company (DIA SPAIN SA) in these countries and the common interest that we share is to discover cheaper, more profitable markets. The participation of international managers in support of this project might also consume an important part of their time but, they will realise that the availability of results will be their best compensation.
5. Survey in my proposal was basically connected with the idea of using questionnaires and interviews to approach separate groups of the audience. The great advantage of the method was the ability to have data from a wide range of representatives, suitable to the sampling frame characteristics.
6. Regarding the ethnographic approach, I had to become a participating observer of the studied groups. This helped me prevent any modification of the natural behaviour of my panel. My experience in this section of fresh products for more than 16 years allowed me to control the conversation and keep the audience concentrated to the targets of this study. I felt able to recognise the inherent problems. Facing similar situations in the past, during the training I had provided to farmers, I could detect the obvious problems and lead the audience to the mutual exchange of information needed for the analysis.

### 3.4 Consideration to overcoming the subjectivity involved as insider researcher

Before a research project is completed, it is already influenced by many external factors and constraints (such as the funding institution's policies). But it is also oriented according to important internal factors such as the researcher's desires, interests, and preoccupations. Even at an earlier time, the researcher's choice of profession and, later on, of research topics are in great part the result of this subjectivity. Such an idea often appears to be so obvious that it is easy for us to forget. For example, during a regular meeting with the other research teams of our faculty, a colleague presented the results of her study on couples and on the factors leading them to divorce. As the meeting was brought to a close, a few participants remained in the room and discussed more personal topics. When another researcher overheard this colleague who had that day presented her study complain about her chaotic relationships with men, he couldn't help but reply: "Well, with a bit more research, maybe you'll find your answer!".

This example illustrates the importance of understanding and "owning" our subjectivity. It not only demonstrates that it can influence our work but it also suggests that what we find may be nothing more than what *we* were *specifically* looking for, sometimes without even knowing it. As such, avoiding the question of subjectivity altogether will only invite it to have a more subtle but yet very important impact on what we do or find (Brillon, 1992). Obviously, this makes such research quite more complicated, as this difficulty will also be present when the time comes to analyse anxiety-provoking data. Devereux (1980) clearly demonstrates this when he suggests that the scientist tries by all means to defend himself against anxiety by overlooking certain data or meanings, overanalyzing others, forgetting certain major or minor concepts, or giving unclear or vague descriptions of his findings.

These difficulties, often referred to as self-deceptions (Salner, 1999), are the result of the researcher's use of defence mechanisms. Devereux's comments have already introduced us to a few of them:

1. Denial, through which an individual "deals with emotional conflicts, or internal or external stressors, by refusing to acknowledge some aspect of external reality or of his experience" (Perry, 1990, p.17);
2. Repression by which an "individual deals with emotional conflicts, or internal or external stressors, by being unable to remember or be cognitively aware of disturbing wishes, feelings, thoughts or experiences" (p. 31);

3. Displacement used in order to deal with conflicts by generalizing or redirecting a feeling or thought onto another less threatening object and;
4. Intellectualisation through which an individual deals with conflicts, thoughts or feelings by the excessive use of abstract or generalized thinking.

Another defence mechanism used by individuals -researchers included- is projection. Projection can be defined as dealing with conflicts by falsely attributing feelings, impulses, or thoughts to others. An individual often makes use of projection when "confronted to an object by whom he feels *threatened* or to whom he feels some *affinity*" (*my italics*; Perry, 1990, p. 19). A good example and examination of the effects of projection can be found in Neck, Godwin, and Spencer's study of decision making processes (1996) and in the later replies by Kahn (1996) and Godwin and Neck (1996). Finally, although many other -if not all- defense mechanisms can possibly be influential in a research project, two more seem to be often overlooked: reaction formation and omnipotence. (Drapeau Martin, “The qualitative report”, volume 7, 2002).

In my case, the issue of confusing Greek and other countries’ mentalities is basically what I had to avoid. Quite a few times I caught myself addicted to Greek habits, but this sort of behaviour could not support the objectivity of the project. Before making any interviews or questionnaires, I had to ask my colleagues for any specifications (due to legislation or ethical issues) that had to be considered before sending them the questions for that sampling frame. In a nutshell, I had to focus on the following precautionary measures:

- Confirm that my employer understands and agrees with the final proposal
- Build a friendly, credible atmosphere with the farmers to get their real information about doses and expenses in practice.
- Describe in detail the purpose of the study to my consultant, so as to get the best fitted questions for the interviews
- Maintain close cooperation with the University and develop its support
- Anticipate any ethical issues by the focus groups of agricultural equipment stores about privacy, anonymity, secrecy and also any possible contradictions between these and the farmers.
- Respect the different privacy requirements of the audience in any country through the recommendations of the local managers, colleagues from the subsidiary company that undertake the data collection.

### 3.5 Other areas of research methodologies for implementation (borrowing and amending ideas)

As indicated before, I made use of mainly authoritative and logical knowledge, as parts of the epistemology. This means that I had to search deep in the professional literature and then work out the findings that lead to the final conclusions. However, I felt that in both epistemologies and methodologies I should make use of several combinations in order to collect the maximum possible amount of data.

The empirical part of epistemology seemed to be necessary also. I had to get involved in procedures such as interviews with merchants and cooperative unions in order to guide the research. These would be the source to analyse and it should be as rich as possible to avoid any statistical errors during the analysis.

In terms of methodologies, I could easily apply the case study approach. Actually, this is something in which I have long experience, after the innumerable problems I face in my current position. Each imported product is a separate case study, either for price or for quality reasons, and refers to specific aspects of the fruit trade. The issue here is how easily the researcher can expand the findings-results of a case study to a wider range of situations. The case study approach is usually accompanied by highly qualitative data collection techniques which enable a deep understanding of the case in question. The selection of the case study, the ability to relate it to a wider context and the possibility of undertaking a comparative study can lead to even deeper sources of information and unique considerations when choosing the final questions for the interviewed.

### 3.6 Rationale for the research approach

The focus groups of cooperative unions and the farmers' questionnaires were analysed for the same purpose: To approach the real cost price basis of products and find the economic threshold of these crops. This threshold is the minimum profitable price at which a product can be sold. The analysis of merchants' interviews brought out their margin levels. The combination of both will lead to satisfactory negotiations. In other terms, the knowledge of each one's confines can lead to permanently reasonable fruit prices in the market, without absorbing the profit of all involved parties. The most important benefit I gained from this project is the capability to overcome the great difficulties in supplying fresh fruit and vegetables of consistent quality throughout the year. Either bad weather conditions or excessive needs of specific markets lead to price bursts. Farmers try to increase prices as much as

possible and therefore all super markets are obliged to raise their retail prices too. The effect on the consumer's basket becomes very important. Data from the loyalty programs that examine the whole basket of one household show that customers are searching for the cheapest alternative fruit and vegetables to fulfil their needs. Especially in discount super markets where the target group is mainly lower to middle income, the effect on sales is even stronger.

On the other hand, as a category manager I am responsible for reporting the total sales as well as the total margin of my category. In other words, when I lose profit from expensive products, I have to bring it back through increased sales of cheaper ones. This, of course, premises the permanent existence of product inside the stores, regardless of what the whole market price policy will be. To sum up, especially in difficult periods (lack of products), the competitive advantage comes from the ability to sell at the same normal price level as before. In that case all current and new customers realise the low price image of the company, which increases their loyalty.

A large part of the data had to be collected through qualitative research. The suggested approach was **Action Research** and this has to be applied to

- The members of cooperative unions in order to get feedback about their production cost. These unions are non-profit semi-public organisations that support the farmers' rights. They keep some taxes from farmers' production and the main target is to provide equipment on the lowest cost basis of the market.
- Merchants (importers-exporters) to check out the real cost at which they buy one product and its differences between countries.

The Action Research cycle had to follow the steps below (as stated in section 2.3.9):

1. Ask questions about cost of total equipment (seeds, fertilizers, pesticides used for the same crop per hectare). Also other cost factors (taxes, transportation) that a merchant has to pay for an import.
2. Collect data from the various focus groups. In Greece I can conduct these conversations while in other countries I shall ask the help of my colleagues from the local subsidiary companies.
3. Analyse the final outcome and specify the cases that seem to present significant contradictions, e.g. average cost of tomato production between Greece and Turkey.
4. Formulate the hypothesis: "the agricultural cooperative unions are the base of the lowest cost price for the farmers"
5. Plan action steps depending on whether the hypothesis is becoming true or false.

6. Positive action for change- This is actually a summary of all the observations and results coming from focus groups.

However, I must confess that I was running the risk of not receiving true information from the focus groups of merchants due to obvious interpersonal contradictions. Perhaps they would not be amenable to discuss openly and betray their negotiatory secrets to opponents. In such a case, I turned to personalised interviews. On the contrary, there was no similar problem with the cooperative unions, since their mission is to expand the farmers' base by means of minimising their expenses. This is especially true nowadays that international legislation pushes agricultural methods to a human-oriented approach, by use of fewer chemicals for health protection. From this point of view, unions have already realised that their future survival is connected to the protection of agricultural income. The rationale justifies their involvement in this study for the sake of cost reduction and not of increased sales, in which unfortunately most private agronomists still believe.

The survey was the second suggested research approach. It is associated with the idea of asking groups of people or individuals. Actually, this is the complementary way to collect the same quality of information as above, but from the opposite side. I refer to speculative private stores of agronomists that work on maximizing their sales and therefore on overloading the farmer. The last source of information was the farmers themselves. The questions put to the farmers should be similar to the ones mentioned in the Action Research section. It is clear that the conclusions from both cooperative unions and private stores would confirm or defeat my hypothesis. There were two things I had to pay extreme attention to: first, to select a suitable sampling frame of private agronomists; actually, I focused on the ones located in areas producing tomato and potato, since these are the basic products I have investigated. Second, to define the number of responses required to make sure that the results will be valid for everyone.

In addition, an attempt to minimise biases caused by interpersonal variables and diversity of questioning had to be made. The sequence of questions had to leave the closed ones for the end and the open, leading ones for the beginning.

### 3.7 Rationale for the data collection techniques

Due to the complexity of the project, I found it necessary to make both quantitative and qualitative research. The latter was based on focus groups of managers or merchants to collect data about

- new ideas for new products development
- evaluation of new products

- communication and promotional strategy for the successful launching of a new product

The selection of the participants had to be such as to represent the target market I'm interested in. I had to make sure that the group was homogeneous in order to minimise any contradictions between members due to different experiences, mentalities or even communication skills. I realised that my role in this case was vital for the whole process because I had to:

- create the suitable, relaxed atmosphere among participants and set the targets of the conversation
- provoke vigorous chats to take key answers
- collect all answers and specify the agreement level among all answers.

There were some possible drawbacks of this method that I had to avoid:

- in case of many different opinions I faced difficulties in explaining them
- it was possible that someone could act as "opinion leader" for the rest of the team and influence their opinions towards his/her own
- the other members of a focus group claimed agreement with the main idea of the team while in reality they disagree
- it had to take place twice: one time for the cost price base (agronomists, cooperative unions), and the second to include the dealers (wholesalers and retailers)

Once I faced confusion, as stated above, I had to cancel the focus group and turn to personalised interview.

Regarding the quantitative research, this had to consist of simple questions, so as to be comprehensible even to low-education farmers. The method was obligatory because I needed figures about the cost of production from several countries. I made use of all the different types of questions, such as ratio, interval, ordinal and nominal. I mainly used e-mail and personal interviews to have the questionnaires completed. However, I had to pay extremely attention to:

- the way the sample was selected (to avoid statistical errors)
- the content of each question in order to cover all needs of the research
- the number of alternative answers per question which depends on the behaviour of the interviewed crowd
- not to interpret wrong answers in case of statistical errors
- clearly mention all demographical information of the sample to help in the rest of the analyses.

At the beginning of the statistical process, I was planning to focus on descriptive statistic and describe the frequencies of every population in the sample. I also made clusters for the different groups of interviewees as they had to be examined separately. I reported on all the statistically important cases and proceeded with further analysis.

The most remarkable analysis was to use the t-test and analysis of variance to check if the difference in educational level of farmers is leading them to different estimation of their costs. From my experience, farmers with elementary level education –which is still very common– can hardly realise not only the meaning of fixed asset depreciation but also the issue of their personal work in their business that has to be compensated. So even if they think they have made a profit after initial cost calculations, they end up in debt.

The data analysis was done with the SPSS statistical program and the findings of the research are presented in Excel tables and bar charts (appendices).

At this point, I realised that I had to distinguish myself as researcher from my daily duties. I had to go deeper into the data mining techniques that I used during the Master's course and re-evaluate the ones best suited for this project.

The trap to collect data first and classify them later was very dangerous. I refer to the qualitative approach of focus groups. It was necessary to create the basic questionnaire first and build the sequence of questions in such a way as to make the audience feel relaxed and comfortable. The target was to get reliable and true answers so I had to control not only the atmosphere but also the duration of every question until all possible answers come to the table. Thinking further, I worried that if I don't earn their respect they would probably reject my effort and mislead me. I believed, however, that the key is the usefulness of my study for these people. Why then shouldn't they support me?

**3.8 Project feasibility**

Regarding all secondary sources of information (statistical data, average consumption of fresh fruits and vegetables, allocation of crops and average production, etc.), I made use of Internet searching machines and the Greek National Statistical Service. At the same time, I had to prepare the focus groups of cooperative unions, agronomists and merchants. Normally all farmers were expected to give me feedback by questionnaires. However, they were unable to fill in the questions so I had to complete the questionnaires through personal interview. For the

other countries I used the international department of my employer (DIA SPAIN SA) to get in touch with the other colleagues and get the same amount of information through the Internet. To prepare the final version, I went through the digital library of Middlesex University, the Athens University of Economics and Business and the Agricultural University of Athens for relevant bibliography and further articles.

### 3.9 Strengths – weaknesses

Evaluating this experience, I feel very well informed on the distinctive features of the Greek market. Both the national preferences and the quality standards per country constitute the mix of factors I had to analyze. Checking through the market basket per customer from the scanning data I could make a deeper correlation between demographical characteristics and product categories preferred by customers. One recent outcome from my Master's dissertation is that discount super market customers in their majority (60%) have a higher financial profile and believe that the relation of quality and price offers them clever purchases. Having this in mind I'm working now on the improvement of f&v assortment, planning some future promos even for expensive products that are theoretically suggested for hyper market target groups.

Another critical factor affecting the final outcome very much was the export capacity of the exporters that were interviewed. To make a fair analysis I had to select comparable merchants so that their cost price basis would be comparable too. Otherwise, I was running the risk of collecting non-corresponding data because especially in the agricultural sector where every farmer is responsible for selling his own crop, he can easily sell the same product 10-20% cheaper if the dealer is interested in 10 times higher quantity. This difference in the final income clearly creates a different base of cost estimation per hectare and per kilogram of product.

Of course, the whole study was a time consuming process and I had to utilise every single minute of my spare time in order to keep to the timetable mentioned above. However, it seemed more like a unique challenge to me to learn more of the international commercial status.

### 3.10 Project report

The final conclusion of my project is a recommendation guide for the major problems of fruit commerce. I have become aware of the global fruit and vegetables market, so that I know in advance which reaction is the best for any difficulty. Even if I decide to

keep working as an independent advisor of enterprises, I will emphasize the catalytic moves that turn a troubled agricultural business into a profitable one. For the time being there's no serious representative in the Greek agricultural population to deal with wholesalers. Every single farmer has to negotiate his own crops' price without any guarantee about the financial profile of the merchant (payment terms, reliability). He doesn't even have a clue of what credit notes he will receive before the final payment (claiming quality issues) which in the end reduces his real income. For these reasons, farmers turn mainly to super markets to ensure their payment. I feel that they need just clear directions to the most beneficial paths.

By finishing this study I know that my directions will guide them to contract basis agriculture with fixed prices for the harvest before actually seeding their crops. This is generally a proposed solution, though it needs improvement in several issues (species, crop season, target markets).

In the short term my current position will be strengthened while on the long term I will improve my CV, making it more attractive to other multinational companies. Taking into consideration the future trends in the fruit trade, meaning the market concentration to multinational companies, it's reasonable that an international recognition of this perishable section will mean a lot to my future career steps.

### 3.11 Data collection techniques for the analysis

The total amount of information for this research was gathered by several techniques. The main tool used was the interview with importers and traders in all countries (Source: Stathakopoulos Vlassis -2001- "Market research Methods", Stamoulis Editions).

Especially for Greece, there were also some agronomists and cooperative unions' managers interviewed. The questions were centred around the whole issue of the production procedure (cost, investments and amortization).

Thus, my research method has included questions about all these aspects in such a way as to make them comprehensible to everybody. After all, I need to find out the actual expenses incurred on this market sector and not subjective estimations.

I also need to learn to distance myself from my job duties. In other words my current occupation in making negotiations with Greek farmers and merchants has to help my research thoughts and not lead them. Due to the objectivity that every researcher needs, I have to keep some distance from my job role. I have to look for the forest in my research not for the tree.

Evaluating this experience, I feel very well informed on the distinctive aspects of this Greek market sector. This has helped me considerably on this second part of my doctorate, in learning about non-European market conditions. Both the national preferences and the quality standards per country set the mixture of factors I have to analyse. Checking through the market basket per customer from the scanning data I decided to make a deeper correlation between the demographical characteristics and the product categories preferred by customers (tomato and potato). One outcome from my Master's dissertation was that discount super market customers in their majority (60%) have a higher financial profile and believe that the relation of quality and price offers them more effective purchases. Having this in mind I'm working now on improving the fruit and vegetable assortment, planning some future promos even for expensive products that are theoretically suggested for hyper market target groups.

Another critical factor that might have an impact on the final outcome is the profile of the exporters which were interviewed. To make the analysis fair I had to select comparable merchants so that their cost price basis would be comparable. Otherwise, I was running the risk of collecting non-corresponding data because, in the agricultural sector in particular, every single farmer is responsible for selling his own crop, the same product can be sold at 10-20% cheaper if the dealer is interested for 10 times higher quantity. This difference on the final income clearly has created a different base of cost estimation per hectare and per kilogram of product.

However, the risk of becoming complacent was quite dangerous, so I had to focus on the precautionary measures mentiones in section 3.4.

Of course, the whole study was a time-consuming process and I had to utilise every single minute of my spare time in order to keep to the timetable required for the above. However, it seemed a unique challenge to me to learn the international commercial status in depth.

Finally, I took all necessary steps to ensure that the questions will clarify the agricultural production cost for potato and tomato. The comparison had to be done on the total cost of these products delivered to Greece in DDP prices (Delivered Duty Paid). This way, the analysis here has focused on the competitive advantage of price that every single country may offer to the Greek fruit market. In more detail, I had to deduce from the interviews, firstly the cost of the above products from Greece, secondly their cost from non-European countries like Egypt or Turkey and finally from European countries like France, Spain or Poland. Additionally the transportation plus any other costs have to be calculated on the total cost delivered to the Athens fruit market. I had to analyse the factors that create the cheapest product among the

above three European Union countries and create a mathematical formula which shows clearly the percentage of cost price difference from one country to the other.
It's obvious that these products are considered commodities, thus anybody may claim that the study will probably not be applicable some years later. This is actually true, however there's a constant rate of difference every year amongst these countries and occasionally the other countries turn out to be cheaper than Greece, that's why such imports have been stabilised at least for the last 20 years. For instance, every year the prices of potato can change dramatically but the Egyptian ones are always 15-20% cheaper than the local on average. There will probably be a difference in total cost because prices in transportation costs of seeds, fertilizers, etc can change from year to year, though the percentage of difference always offers a competitive advantage to businessmen who import to Greece. For accurate analysis all data of costs were selected in the last 3 years (2006-2009). All parties interviewed were asked to learn about the average costs of the last three years in order to avoid any subjective factors that may affect their responses.
I also had to specify that the selection of countries and products was done according to the National Statistical Service. The countries examined in this project are the main exporters to Greece and the products selected are the strongest ones in production. Finally, the living standard of a non-European country can change once it enters the E.U. Thus the prices of agricultural products can change too, but this is another future risk. For the time being, there's no official information that the non-European countries of my sample will enter the European Union as full members. Turkey, for instance, has not signed any trade agreement with the European Union yet, although, a trade agreement has been signed between Greece and Turkey for the elimination of trade taxes.

### 3.12 Questionnaires' structure – The research questions

The main research questions I had to include in the study are listed below:

- What sort of crops will I compare: conventional, biological or integrated crop management (ICM)? Conventional means incontrollable use of chemicals, biological means no chemical use at all, while ICM is the rational use of chemicals (minimum use to guarantee humans health)
- How many countries shall I take into consideration? As mentioned before, I will refer to Greece, France, Spain, Poland and Cyprus regarding the European countries. Turkey, Egypt, and FYROM are the non-European countries of my sample. All the above countries are the biggest exporters to Greece for the products tested.

- Which sources shall I ask? Farmers, cooperative unions, trading companies, central fruit markets, super markets, other retailers.

All the above were placed as filters at the beginning of my questionnaire, so I would avoid inappropriate sample. The other questions had to examine the technical and numerical data of the farmer's area, such as:

- Average cost of seeds, fertilizers, chemical pesticides. Is overdosing an issue of increasing cost?
- Average labour cost
- Average transportation cost
- Production per hectare and seasonality: The higher production achieved, the lower the cost will be. Also, the earlier seasonality of product leads to higher retail price.
- Logistics: Not only transportation but also data mining systems. At this point I have to investigate the accuracy of information regarding the known and unknown loss of the product.
- Legal issues: Taxes and relevant charges associated with exports.

Finally, the questionnaires seemed to be the most useful tool for approaching farmers. The method was obligatory because I needed figures about the cost production from several countries.

Part of the qualitative research were also some interviews with cooperative unions to collect data about

- Full cost of agricultural crops
- Alternative solutions for farmers to reduce cost
- Whether the high value of agricultural supplies guarantee a higher quality-price of the final product.

There were some possible drawbacks of this method that I should avoid:

- In case of many different opinions I was facing difficulties in their explanation
- it was possible that someone could act as "opinion leader" for the rest of the team.
- The remaining members of each group can just agree with the main idea of the team while in reality they disagreed.
- It had to take place twice: one time for the cost price base (agronomists, cooperative unions). The second has to include the dealers (wholesalers and retailers).

Unfortunately, the vast majority of farmers are no so used to similar studies. Thus, they misunderstood many questions and gave contradictory answers. This has created a long delay in my study because I had to travel around Greece and visit these people face to face. I had to explain each question separately and fill in their answers to the questionnaires myself. The most common mistake involved the total production and expenses per year. Some areas have one productive cycle of potato or tomato while others (normally southern, with warmer climate) have two productive cycles. Farmers from the latter area faced difficulty in distinguishing the productive cycle from the total annual production and total cost, and therefore they answered their questionnaires with figures for the entire annual production (two cycles) instead of the cost per cycle. For the accuracy of this study, the average cost has been calculated separately for products being cultivated once per year compared to other geographical areas, which are cultivated twice per year with the same product. The same problem appeared also in the analysis of tomato crops: separate analysis was performed for open-air crops versus glasshouse production (see cost figures in Chapter 5).

**3.13 Survey**

As a research approach, it concerns asking groups of people or individuals. Actually, this is the complementary way to collect the same quality of information as above, but from the opposite side. I refer to speculative private stores of agronomists that work on maximising their sales and therefore overloading the farmer. The last source of information was selected farmers themselves. The questions put to the farmers should be similar to the ones mentioned in the Action Research section. It is clear that the conclusions from both cooperative unions and private stores will confirm or defeat my hypothesis. There are two main things I have to pay extreme attention to: first, to select a suitable sampling frame of private agronomists; actually, I focused on the ones located in areas producing tomato and potato, since these are the basic products I will investigate. Second, to define the required number of responses to make sure that the results will be valid for everyone and to avoid any statistic error during the SPSS analysis (Cordon, Bruner C. II and Hensel, Paul J.-2007- “Marketing scales handbook - A compilation of Multi-Item Measures”, Volume I, II, III).

In addition, an attempt to minimise biases caused by interpersonal variables and diversity of questioning has to be made. The sequence of questions has to leave the closed ones for the end and the open, leading ones for the beginning. Since the sample interviewed is spread over several countries, I had to isolate equivalent sources of information in all countries tested. For instance, wholesalers from all

countries have to be analysed separately from farmers and retailers. Each section of interviewed people is clearly focused on specific aspects of the agricultural production cost. So it would be a dangerous pitfall to mix all these parts in the analysis.

For these reasons, the quantitative research (Survey) had to be conducted by asking simple questions, which would be comprehensible even to the low-education people of the sample frame (Source: Panagopoulos N. -2004- "Quantitative methods II", Athens University of Economics and Business).

My plan was to make interviews with the merchants as follows:

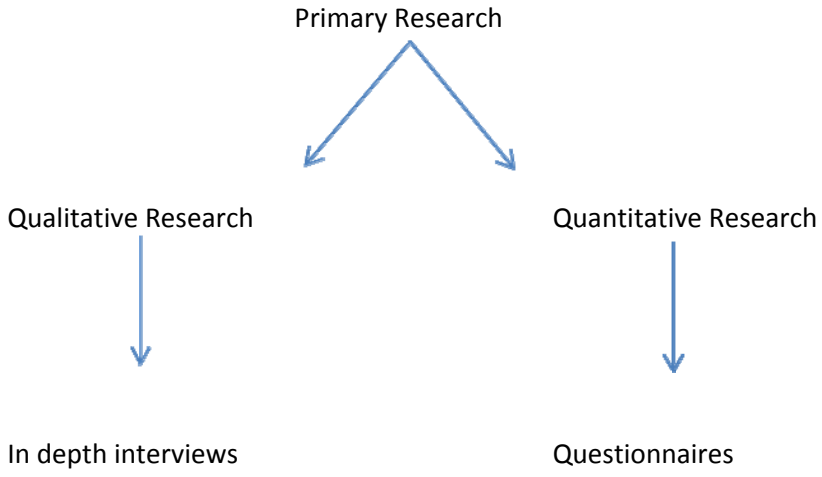
- One group of Greek importers to discuss the figures (costs, logistics etc.) for tomato and potato
- One group of foreign exporters to discuss the same topic from the other side – so that I can cross check all the answers. The case study of France (potatoes) and Turkey (both potatoes and tomatoes) is a typical representative of these crops.

However, the risk of receiving misleading data by them was still existent. They often suspected that I was planning to make direct imports for my company and tried to mislead me with fake numbers.

Finally, the focus groups of the above people were impossible in practice due to ethical issues (avoidance of conflicts among traders of the same level of competition). So the whole data was collected by personal interview to each one separately.

The graph below describes the research methods that were used synoptically:

**Graph 3.1**



## CHAPTER 4: PROJECT ACTIVITY AND DEFINITION OF HYPOTHESES

### 4.1 Project activity

At the beginning of the statistical process, I focused on descriptive statistic and described the frequencies of every population in the sample. I also had to separate the interviewees as they should be examined one by one. My report has been done on all the statistically important cases and I proceeded with further analysis to them.

One of the most remarkable analyses was to check using t-test and analysis of variance if the difference in educational level of farmers is leading them to different estimation of their costs. From my experience, farmers of elementary education, which is still very common, can hardly realize not only the meaning of fixed assets depreciation but also the issue of their personal work in their business that has to be compensated. So even if they consider they have made profit after their basic calculation, at the end they have negative cash flow, so they make effort to pay back their debits.

The data analysis has been done by SPSS statistical program (Darren, George and Mallery, Paul -2003- *"SPSS for Windows step by step: A simple guide and reference, 11.0 Update"*, Pearson Education Inc.) and the findings of the research are presented in excel tables and bar charts.

In this point, I realized that I have to distinguish my self as researcher from my daily duties. I had to go back deeper to the data mining techniques that I used during the Master course and re-evaluate the ones best-suitable to serve this project.

The trap to collect data first and classify them later was very dangerous. I refer to the qualitative approach of in-depth interviews. It was obligatory to create the basic questionnaire first and build the rate of questions in such a way to make the audience feel relaxed and comfortable. The target was to get reliable and true answers so I had to control not only the atmosphere but also the duration of every question until all possible answers come to table. Thinking further I was a little scared that if I don't win their respect they would probably reject my effort and lead me wrong. My constant belief, however, was that the key is the usefulness of my study for these people. Why then not to support me?

All data (questionnaires and interviews) was analyzed for the same purpose:

To approach the real cost price basis of products and find the economic threshold of these crops. This will guarantee the minimum profitable price a product can be sold. The analysis of merchants' interviews will bring their margin levels out. The combination of both will lead to satisfactory negotiations. In other terms, the

knowledge of each one's confines can submit to the permanent availability of logical fruit prices in the market, without embezzling the profit of all involved parties.

The most important benefit I'm expecting to gain from this project is the capability to support the big difficulties in supplying stable quality of fresh fruit and vegetables during the whole year. Either bad weather conditions or hyperbolic needs of specific markets lead to price burst. Farmers try to increase it as much as possible and therefore all super markets are obliged to raise up their retails to. The effect to the consumer's basket is becoming very important. Data from the loyalty programs that scan the whole basket of one household, they claim down that customers are searching for the cheapest alternative fruit and vegetables to fulfill their needs. Especially in discount super markets where the target group is mainly lower to middle income, the effect in sales is even stronger. These parts of people try to replace purchases of expensive fruits with cheaper ones (source: AC NIELSEN, 2006, "Market basket analysis").

On the other hand, as a section manager I permanently apologize for the total sales and furthermore the total margin of my section. In other words, in case I lose profit from expensive products, I have to bring it back through increase of sales of the cheaper ones. This, of course, requires the permanent existence of products inside the stores, irrelevant what the whole market price policy will be. To sum up, especially in hard periods (lack of products) the competitive advantage is coming from the ability to sell at the normal price level as before. In that case all the current and the new customers realize the low price image of the company which is increasing their loyalty.

In a whole, the reason to make an import is appearing whenever the local prices are increasing dramatically. But in such a case most importers also increase unreasonably their own prices for higher profitability. This phenomenon turns most customers to alternative fruits and vegetables, so finally the real income is reduced due to lower volume.

Furthermore, the damage for many importers appears to be huge as they end up suffering form big loss of imported volumes, due to overestimation of the market potential.

The scope of the project is to identify the price levels (always as a percentage increase from the first cost price of the product to the final retail price and not to write down real prices that products achieve from year to year). This way the project outcome can have a diachronic validity and may be used as an effective handbook to future imports.

This module's contribution is basically observed at the multifarious experience of analyzing both qualitative data (interviews) and quantitative ones (questionnaires). It's clear that I had to isolate myself from daily interests and devote extreme attention to the data collection, during the whole project. Time consistency and sufficient number of interviews were necessary to avoid statistical errors at the final outcome. Due to the variety of audience I also faced some ethical issues, regarding the current competition of agricultural products. An issue of this study could be that the collected prices directly from the producers could be significant lower than the prices offered by the importers of fresh fruits and vegetables. This may be perceived as an offence from the importers.

Evaluating the procedure above, I feel that I am very well informed on distinguishing the challenges aroused in the Greek market and the rest countries of my sample (European and non European ones).

The final conclusion of my project is a recommendation guide to face traditional problems of fruit commerce. The reader can become aware of the global fruit and vegetables market, to know in advance which the best fitted reaction for any difficulty that may arise. Even in the case that I decide to keep on as an independent advisor of enterprises, I have a strong tool to emphasize on the catalytic moves that turn a tortuous agricultural business to a profitable one. Market is always pressing prices higher while consumers ask for their deduction. The results of my project do specify the equilibrium levels to leave all intermediate parts satisfied.

However, as mentioned from the beginning, the fluctuation of all costs analyzed here is still very big. Many external factors affect a lot from country to country the final modulation of agricultural production cost. The challenge here is not to be trapped by the absolute numbers of cost. This may differ from one year to the other even for the same country. On the contrary, the real benefit seems to be the key factors that are constantly implemented by some specific countries and guarantee the competitive advantage of either quality or price. The same product appears great differences of production cost from one country to the other. Apart from legal charges that may not be changed, the rest techniques have to be transmitted and reduce cost or increase quality to the non competitive countries. In chapter 6, (conclusions and recommendations) this is analyzed in full detail.

To summarize, I would say that the sources of information are mainly five:

1. Greek farmers asked through questionnaires
2. Cooperative unions asked through interviews
3. Importers and wholesalers asked through interviews too.

4. Foreign countries' wholesalers asked via personal interviews. Besides, the intranet of mother Dia Company in Spain has been a valuable tool in the data collection.
5. Embassies regarding details for the Scandinavian countries' market.

Greek farmers were approached through a detailed questionnaire in which they had to complete several data. Apart from the basic information of costs per product, they were also asked about the crop methods (check of innovation) and their preference to imported products (attitude as customers). All these data came into comparison with their demographical features.

The interviews to cooperative unions included questions about cost base, mentality of farmers, research and development of new crops, restructure of traditional ones and market strategy.

Greek wholesalers and importers were interviewed about their marketing policy, their target groups of customers and the prevision methods of market changes, on which imports are based.

Finally, foreign wholesalers and exporters we asked (personal interviews) the same information but from the side of the seller (not buyer as the importer is). These foreign merchants were asked about different specifications of products according to the export destination and the profile of their customers. How they organize their farmers' base and whether they work on a contract basis with them. The selection of foreign traders was based on the suppliers' database of mother company Dia in Spain. The main approach was done by mail, phone and intranet. The last is the internal tool of group Carrefour, to share marketing information around all involved countries. As far as the Scandinavian countries concerned, my information has come from both the embassy and the National Statistic Service of Greece.

### 4.2 Definition of Research Statements and Research Hypotheses

All informative data mentioned above on the project activity has been formulated to the final statements and hypothesis given below. Each of them has been processed by SPSS statistical program and the results of the analysis are presented in chapter 5. The assumptions, (1 to 23 below) taken in the project, indented to a deeper investigation of farmers' and wholesalers' strategy. Even more, it searched into the biggest differentiation from one country to the other so that to isolate the most important advantages of each one separately and to suggest the most suitable marketing mix per case. Regarding the future researcher, as shown in chapter 6, there are important issues for further investigation.

Below are the statements and hypotheses in arithmetic row:

Research Statements:

1. Average cost in euros per kilo of product.
2. Average cost in euros per kilo of tomato crop (glasshouse and not).
3. Average cost in euros per kilo of potato (fields with one crop circle per year vs. fields with two).
4. The perception of Greek farmers regarding to European Union imported products, accordingly to their education and their age.
5. The perception of Greek farmers regarding to non European Union imported products, accordingly to their education and their age.
6. The precautionary use of chemicals depends on the cultivated surface of land.
7. The precautionary use of chemicals is related to the production cost (according to hypotheses 1 & 2 above).
8. The production cost is differentiated according to the cultivated land.

Research Hypotheses:

1. The age of farmers may influence their attitude towards imported products.
2. The education of farmers may influence their attitude towards imported products.
3. The income of farmers may influence their psychographic features.
4. What the correlation of cost per product to the age of farmers.
5. What the correlation of cost per product to the income of farmers.
6. What the correlation of age and psychographic features.
7. What the Correlation of educational level and psychographic features.
8. Is there any approval of biological crops according to income, age and education?
9. Selection of famous brands of fertilizers and seeds is based on the educational level and income of farmers.
10. Reliability of Greek production (value for money choice), depends on education, age and income of farmers.
11. The perception of quality (Greek production) depends on the educational level of farmers.
12. The education and age may influence farmers' decision to storehouse own production for future needs.
13. The miserliness of farmers' in brands depends on their income and cultivated surface of land.

14. The approval of biological (organic) crops is related to the selection of branded agricultural equipment.
15. Knowledge and use of internet may reduce the production cost.

### 4.3 Presentation of results of Qualitative Research: "Content Analysis"

The results from the interviews with the sample frame of our research (foreign farmers, traders, cooperative unions and embassies) are described in detail below.

#### 4.3.1The interviews with Greek wholesalers and importers

As far as wholesalers and importers are concerned, in order to avoid any ethical issues we focused our interview on the working procedures of their enterprises (extra cost per kilo for the whole elaboration, suppliers' base, and customers' base). We made the assumption that the farmers' costs are the ones in chapter 5.1.1 and our research in these merchants has focused on how they can buy cheaper or how they can reduce their working expenses even more. In the current situation, the vast majority of them work on a daily basis negotiation of prices with farmers. Once they receive a phone call from their customers (retailers) for price change (usually decrease), they move back to their suppliers (farmers) to drop prices too. They claim about very hard competition among wholesalers which forces them to adapt their price policy even on a daily basis. Customers who remain reliable in their payments are limited and no supplier wants to lose them, especially nowadays that they cannot find easily alternatives. Among the strongest retailers are still all super markets who keep a market share of 70% in fresh fruits and vegetables (Ref: National statistic service of Greece, 2008). So any price pressure from these customers to wholesalers has clearly to be transferred to the farmers who are finally the recipients of the market's attacks. This behaviour can cause financial deadlocks to the productive people since they are occasionally forced to sell below their break even point.

Importers work on the same way more or less, but many of them are a little more organized in terms of quantities forecast and storehouse. They keep a daily price file of their products in the whole market and notice the reason of each price. So, they obtain an annual basis of prices fluctuation and the reason they occur. This proves to be valuable in many cases, because the causes usually repeat. Either specific bad weather conditions which damage the production or massive exports to specific countries are some typical reasons to provoke prices increase. Traditionally, this phenomenon is related to increase of demand or decrease of availability or even

both. An important difference between importers and wholesalers is that the first are better informed about the global situation of fresh production and this provides them an extra ability to react earlier in cases of expected price increase. In terms of settlements however, they are usually well equipped to store sufficient quantities in their cooling chambers and anticipate the market's future gaps. On the other hand, traditional wholesalers are more focused on the local market and suppliers. Therefore, they are not so flexible to find alternative supplies in foreign countries and they are the first to run out of product in case of excessive need. They mainly search for alternative productive areas inside the country to purchase products and in case of product lack they may turn to importers for the ''second hand'' purchases.

Even so, they both complain about the difficulties that very often appear in their daily duties. The worst problem is to forecast the duration of products' lack in the market. Most importers react simultaneously and bring massive quantities to Greece. Such an overloading usually creates opposite results. Merchants are obliged to sell under cost in order to avoid stocking and damages of the products. They are concentrated on commerce but the short shelf life of all fresh products is the basic price killing factor. These ups and downs in the market induce confusion to the customers and affect their loyalty to retailers. A rapid increase in price due to lack of stock is followed by a deep decrease due to over availability of imports who suffer from loss. However, customers cannot perceive this situation and very often they complain about extreme margins of the retailers. It's easy to understand how catastrophic this is for their brand image (Source: Output from the interviews with Greek importers).

Another reason for such an uncontrollable situation, according to many importers and wholesalers is that during the last twenty years the competition among them has increased dramatically due to new entered players in this market. There were many packing houses that were established by the European bounties. These didn't implement any market analysis before making their settlements. Some of them have overestimated the achievable market share in Greece and created huge industries to support such a little market. These factories suffer from extremely high working expenses and we should take into consideration that one part of the establishment investment was European subsidy while the other was bank loan. The more banks press to receive their loan repayments, the more desperate businessmen feel. They rush out to get new sales and occasionally they liquidate products in ridiculous prices, just to pay off the bank completely. There's no commerce education in such investors. Unfortunately, when they notice the actual situation, it's already very late to react. In the Greek countryside, anybody can find several brand new enterprises of

the last decade which never managed to succeed. They already belong to the bank which is selling them in auction.

Though, there are still some enviable cases of companies which have devoted extreme attention to the salvation and welfare of their farmers' base. They are convinced that on a win - win basis the results are always better. For this reason, they stand by farmers in many ways: first, they purchase agricultural equipment and sell it to farmers in order to avoid intermediates and reduce costs. Second, they make a contract every year for the absorption of the whole quantities on a stable price. This policy faced many opponents at the beginning. They were accused that they would steal from farmers the higher prices of the market for their own shake. However, on a long term basis they have been gradually convinced that it's not like that. They do not have any anxiety at all for the dispose of the products and their payments, since everything is written and signed in contract. Besides, there are protective conditions for both sides (seller and buyer) according to the market tendency. In case of general increase, prices will rise and in case of decrease they will fall too. This, however, takes place always inside survival boards for both parts. Once they do not waste time for daily negotiation, they can make a more qualitative job and concentrate on details that enhance their product.

Companies which are directed to this way, usually occupy their own agriculturists who offer full support to the contracted farmers. From the selection of products to be grown, they continue with the cultivation methods and also the collection of production. They end up to the storage conditions for maximum shelf life (Source: output from the interview with FARMER SA).

### 4.3.2 The interviews with Greek cooperative unions

The discussion done with cooperative unions was split in two points: first, on the costs of agricultural production and second on the sales. Regarding costs, cooperative unions generally claim to sell in lower margins the agricultural equipment than private stores of agronomists. In chemicals they make a margin of about 10% and in fertilizers 5%. This is why in the questionnaires distributed to farmers, we noticed big differences in expenses for the same crop. To avoid any ethical issues, there's no clear proof that farmers should prefer cooperative unions instead of private for their purchases. The whole profit is also connected with the rest of advice that lead a farmer to maximize the quality and quantity of production. The selection of store to make purchases is absolutely of personal concern of the producer.

Additionally, there's a big range of alternative chemicals to use for the same disease. Modern farmers are able to select among several financially trustworthy

chemicals to support the crops and affect the total cost. From cheap ones to expensive brands, all of them have the same active ingredient which theoretically affords the same efficacy.

Last, we should also note an important particularity of Greek farmer's mentality. Regarding the commerce of fresh goods, the cooperative unions are unfortunately out of the market, focused on traditional ways of policy. They are not adapted to the current customer needs that ask for clean products, without dangerous levels of chemicals, calibrated and modern packaging to increase shelf life. Such ability presupposes the existence of modern mechanical equipment but unfortunately it's not applicable in the case of cooperative unions. The consequence of that delay is the loss of high demand markets with a stable increase. Therefore the turnover for such unions in fresh production sales is reduced.

Another fashion of the last decade is the creation of mixed companies from private agronomists. They sell the whole equipment to producers and also they trade their production. Many cultivators prefer to cooperate with private stores and achieve this triangular partnership. They select their equipment, geoponic advice and production sales to be coming from the same store. They feel more comfortable to have their production safely disposed. For the better efficiency of such enterprises, businessmen are aware of consultant offices which undertake the whole business plan to become beneficial, as shown in chapter 2 (section 2.3.7)

### 4.3.3 Data collection regarding foreign countries of the project

#### 4.3.3.1 France

Regarding France and the rest countries of this research, there is no data from farmers with the exception of farmers in Greece. All information regarding their production cost is based on interviews with traders, as well as the suppliers' database of Carrefour France. Potatoes' exports to Greece are around 22.5 millions kilos (Section 2.2, Table 2.9), which is 22.08% of total exports to Greece. Actually it is the second main exporting country after Egypt (with almost double quantities). In tomatoes, there's no significant exporting activity. Actually, due to local preferences in different varieties, there are no common qualities to be transferred between the two countries (Ref: magazine *"Tomato news"* -October 2006), SIAL Paris, October 2006).

Therefore our approach is narrowed to the potato production. Farmers in France have on average much larger fields than in Greece. This creates advanced economies of scales: they need less set equipment like watering machinery, drill etc.

They also save labour time through concentrated visits in one field for all crops. Traders also share advice with the cultivators about innovated varieties and new consumption habits. Thus, France is traditionally focused on different species according to the local market demand. There are different species of potatoes for fry, others for the oven and even more for boil. Usually clients prefer washed than brushed potatoes regardless of the risk of shorter shelf life.

In super markets, both bulk and packed products are available. Customers are familiar with the quality standards of both shape and size. However, due to local consumption habits, smaller potatoes (calibre 35-50mm) are supposed to be more expensive that bigger ones (size 50mm+), while the opposite stands for Greece. Farmers are also well trained to this mentality, so they know what prices to expect according to their production's quality. Another fashion of the recent years is the demand for first price packages of potatoes from the super markets. These are either private label products or other unknown brands, which refer to price oriented customers. The constant effort is to create customer loyalty through low prices. The most difficult thing however, in such cases, is the quality stabilization. A medium quality of "first price" fresh products can rot even earlier than those of high quality and this may damage the total image of the retailer.

#### 4.3.3.2 Spain

Spain is the major export country of fresh fruits and vegetables and it is also one of the biggest producing countries. This information comes from FEPEX, the Spanish federation of exports. The total quantities exported in 2007 were 9.5 millions of tons. The destination was middle Europe and the total amount was 7.68 billions of euros. Regarding vegetables the main export activity is done in tomatoes (890,000 tons), lettuce (520,000 tons), cucumber (440,000 tons) and peppers (370,000 tons). In 2008 (January to September), according to FEPEX, the total exports were 6.6 millions of tons which is a 2% decrease in volume. The total amount of these exports was 5.6 billions of euros, which is 4.25% less than 2007. Especially in vegetables, there was an increase of volume of tomatoes exported (12%), lettuce (13%) and peppers (24%).

Spanish consumption models appear to have similarities with French ones. In tomatoes, the best selling product is variety "Raf", which has mauve colour. This is totally different than the typical red colour of Greek species. Therefore, there's little exportation of such tomatoes to Greece. On the contrary, potatoes are common in both countries. The most typical varieties in Spain are Spunta, Monaliza and Agata. Each variety is suitable for specific cooking. Spunta is the most common one for all

different types of cooking, while Monaliza is preferred for fry and oven. Agata is the most suitable one to boil. The estimation of production cost for Spanish farmers has been done through two alternative ways: first, through interviews of Spanish traders-exporters and second, through direct comparison of DDP prices of 5 kilos product in net packaging. The comparison of DDP prices of 5 kilos net refers to the same retailer (Dia). This is the average price of the product during the last three years (2007-2010) in Dia Spain versus Dia Greece.

Customers' demand for better price and healthier products is the main key in Spanish retail market. This has led to the reappearance of traditional markets, according to Planet Retail research. During the last years, the sales of Spanish retailers have increased a lot. This reflects a stable economy and an increased available income. The new consuming patterns refer to the consumption of ready made and healthy products which means further increase of food sales.

At the same time, consumers purchasing behaviour seems to be affected by price, proximity, service and quality. Therefore, traditional super markets and department stores remain the leaders in retail market. They have almost achieved to double their sales from 1997 to 2007. On top of that, a considerable market share has moved from the traditional retailers to the hypermarkets, due to strong competition. Traditional markets are necessary for the maintenance of local social levels but customers tend to follow price for their purchasing decision. In Madrid, there's still a flourishing traditional market which is trying to compete the stronger players through quality and service.

In addition, the German discount super market stores that entered the country in the 90's, have affected a lot the consumers' behaviour. They were the first that launched private labeled products which gained a market share of 20% in 2005. In Spain, there are super markets of all sizes (convenient stores, traditional super markets and hypermarkets). The key players are Carrefour and Auchan (combined market share over 50%), while German discount stores (Lidl, Tengelmann and Aldi) are still strong opponents.

The department stores and traditional super markets are still owned by local investors (Mercadona, Eroski, Caprado).

The volumes per retailer and structure of stores are shown in tables 4.1 and 4.2 below:

| Table 4.1 | Spanish main retailers in 2005 | |
|---|---|---|
| store name | sales (millions euros) | No of stores |
| El Corte Ingles | 15598 | 1033 |
| Carrefour | 11945 | 3003 |
| Mercadona | 9602 | 960 |
| Eroski | 5478 | 1843 |
| Auchan (Alcampo) | 4196 | 286 |
| Caprado | 2300 | 579 |
| Metro Group | 2309 | 62 |
| Dinosol | 1971 | 482 |
| Schwarz Group | 1700 | 390 |
| SPAR Espanola | 1348 | 1543 |
| | | |
| **Source: Planet Retail, 2005** | | |

| Table 4.2 | Structure of Spanish food stores in 2005 | |
|---|---|---|
| stores type | sales (millions euros) | No of stores |
| super market- urban | 28750 | 8373 |
| department | 19849 | 386 |
| discount | 6274 | 3569 |
| Cash & Carry | 3238 | 292 |
| Convinience/ Forecourt | 2179 | 6889 |
| Virtual | 239 | - |
| | | |
| **Source: Planet Retail, 2005** | | |

#### 4.3.3.3 Poland

**Imports and exports of fresh fruits and vegetables**

The total value of imported fresh fruits and vegetables in Poland is 1.3 billion euros. 71.6% of this consists of fruits and the other 28.4% of vegetables (source: Eurostat, 2007). Tomatoes account for 30.3% of total imports of vegetables and potatoes cover 21.6% of imports. However, in certain periods of shortage, Poland is considered one of the main export countries to Greece (mainly from August to September). For the other months, we should examine the possibility of export from Greece, as shown in chapter 5 (section 5.12.3).

Poland still has very important exports since it is considered the biggest supplier in the European Union for products such as strawberries, gooseberries, grapes, plums,

and sour cherries. These products are mostly used in the manufacturing industry for fruit juices, marmalades, yoghurts etc. A large part of exports are also citrus and exotic fruits. The latter are re-exported tropical fruits and their manufactured products.

In detail, the total exports of fresh fruits and vegetables from Poland were 1,309.6 million euros in 2007. 51.8% of this was vegetables and the rest was fruits (48.2%). The most exported fruit were apples (69%) and citrus (19%). In vegetables, fresh onions (28%) and cabbage (15%) were the most important ones. A large percentage of exports (40%) refer to manufactured fresh products and food, mainly frozen fruits and vegetables. The biggest exports from Poland during 2004-2007 were made to the following countries (in descending order): Germany, Great Britain, Holland, France, Czech Republic, Russia and Italy (source: Eurostat, 2007).

**Consumption levels**

The consumption levels of most foods, including fresh fruits and vegetables, depend on the purchasing power of the customers and the fluctuation of retail prices in these goods.

In more detail, during 2007 the consumption per capita of fresh fruits was reduced from 54 kilos to 41, while in vegetables it was increased from 110 to 115 kilos. Potato remains at high consumption levels, as it is considered a basic nutritional product and can be combined with other vegetables and fruits.

As far as the average expenses are concerned, a typical household spends money mostly for meat, manufactured cereals and dairy products. Vegetables are fourth (7.9% of total expenses) and fruit are fifth (5.9%) (Source: The Greek embassy in Poland).

**Distribution channels**

More than 60% of total purchases in fresh products in Poland are made from traditional markets as well as in food stores. Over the last few years, however, department stores, super markets, shopping centres and street markets tend to play a catalytic role. All of them prefer to make purchases directly from farmers.

Central fruits markets and hyper markets play an increasing important role in the distribution channels of the country. The first central fruit market “Wielkopolska Rolno – Ogrodnicza S.A.” was established in 1992 in the city of Poznan (West Poland). Its experimental use and the experience gathered by it have contributed to the construction of a total of 22 similar markets in the whole state. They work under the

"SA" format. The majority of stocks belong to the Polish ministry of economics and the rest to the local government and banks. The most important of these markets are:

- Wielkopolska Gildia Rolno – Ogrodnicza
- Warszawski
- Rynek Hurtowy di Bronisze
- Lubelski Rynek Hurtowy
- Sandomierski Ogrodniczy Rynek Hurowy

The operation of such markets and hypermarkets promotes the dynamic development and modernisation of the agricultural product distribution channels. Furthermore, it helps the centralisation of the same products from several small farmers.

Poland is the fourth E.U. country in the production of fresh vegetables. The first three are Italy, Spain, and France. In terms of fruit production, it ranks 6th (after Italy, Spain, France, Germany and Greece). According to Mr Ksipolias Theodoros (consultant of the Greek embassy in Poland), Poland has insufficient cooperative unions and agricultural enterprises to cover all of country's trading needs for the sector. Till June 2008 there were only 92 cooperatives in the whole country, representing 3% of the total production (compared to the 30% for the European Union).

There are two main specialisations in the geographical distribution of production:

1. Fruits are mainly produced in four areas: Mazowieckie, Lubelskie, Lodz and Witokrzyskie. This is due to good weather conditions and fast transport from the fields to the region capitals.
2. Fresh vegetables are produced in Mazowieckie, Wielkopolskie, Malopolska and Lodz. In sales, fruits and vegetables account for 37% of the total sales of fresh products in the country. In fact, there is a steady increase in both the value of produced vegetable and in imports–exports (source: The Greek embassy in Poland).

**Production cost factors in tomato**

For the farmer's cost of tomato in Poland, we interviewed the company Green Factory SA , which is located in Zatuski. It specialises in the trade of tomatoes and other vegetables such as lettuce, chicory radicchio, cabbage, cauliflower and broccoli. Between May and September the production of these vegetables is carried out in own fields and local associated growers. From November to April vegetables

are grown in Spain, Italy, France and Cyprus, among others. The production and sale are planned and adjusted to the orders.

The company's clients include many chains in the Polish market (among others Tesco, Metro, Carrefour, Auchan, Biedronka, Kaufland, Lidl) as well as customers of the traditional market. Moreover, the company's export activity involves countries such as Germany, Scandinavia, Holland, Czech Republic and Cyprus. Many quality standards are implemented in this company: Eurepgap, Good Agricultural Practice, GLP and HACCP systems.

According to Mr. Krzysztof Wierzbicki, marketing director of the company, tomatoes in Poland are grown exclusively in glasshouses. In most cases the establishments are permanent, with glass and equipment for full atmospheric and moisture control. Total expenses per kilo of produced tomato are approximately 0.60 euros (including fertilizers, seeds, chemicals, equipment and labour cost). However, we should emphasize the totally different cultivation methods that increase the output very much. So despite the high initial costs of glasshouses, massive production reduces the final cost. This is achieved by hydroponic cultivation methods and specific plant formulations. For better air circulation, the tendency is to select higher green houses. From the 2-3 meters that was a normal height twenty years ago, the average today is about 4-5 meters. This also guarantees better lighting and temperature which are essential for maximisation of quality and quantity. In addition, they reduce the need for chemicals since the plants become more tolerant to infections.

More or less the same information was gathered from two exclusive tomato farmers, who have described their own experience about the local market. Mrs. Anna Prus and Mr. Piotr Prus from Szczytniki own 15 hectares of modern hydroponic tomato glasshouse. They claim that the average cost per kilo is about 0.60 – 0.65 Euros, without final calibration and packaging which is about 0.07 Euros per kilo. The 0.60 per kilo also include the labour cost in the fields. That is 2.5 Euros per hour. The legislation in the country is quite flexible concerning environmental issues. That's why farmers have the alternative to use even some forbidden chemicals in order to maximise efficacy towards plants' enemies. These are supposed to be exceptions though, because the key retailers like super markets ask for quality certificates like Eurepgap or Tesco Certificate. Regarding biological crops, they are still limited since domestic consumption remains very low. The Polish fruit market is very price sensitive. In the customers' mentality there's no added value for organic products and they avoid them till now. Besides, the local market prefers to sell size B tomatoes and size A is proposed for export to neighbouring countries. The size B product (57-67mm) is mainly absorbed by the central fruit market at the cheapest price.

At this point, it's important to clarify the size parameters of Polish tomato, which are quite different to the Greek ones:

- Size A = 47-57mm
- Size B = 57-67mm
- Size BB = 67-82mm
- Size BBB = 82-102mm.

In other words, the cheapest size of tomato in Poland is supposed to be the most expensive one in Greece.

Both the farmers and the marketing director agree that in terms of quality their own production is highly competitive. However, in price they occasionally face competition by other countries like Morocco, Egypt and even Spain. They believe that their products are "value for money" choices and normally they should get even better price in terms of quality standardised production. In such cases they have more expenses and market should add this value to the higher quality. They also support domestic production and don't feel comfortable choosing imported ones when available. Usually, they buy expensive brands for their plants' protection, especially in cases of emergency. Conditions inside the glasshouse and the general climate do not allow the fast expansion of enemies so they believe that any action should be taken after invasion for financial and environmental reasons.

Another great advantage of the hydroponic crops is that the soil remains unused, regardless of whether it is fertile or not. In this system, the plants' roots settle inside an artificial substratum and this allows water and other nutritional ingredients to enter the plant. Therefore the control of crop distribution is related to other factors like moisture and temperature control inside the glasshouse and frequency of substratum fertilizing. These are all aspects that can easily been stabilised by human intervention. Moreover, farmers avoid the necessity of changing the location of greenhouses after 5-10 years as is the case for conventional crops that make the soil infertile. This allows extra cost saving of approximately 50,000-70,000 Euros per hectare. Last but not least, another advantage of this process is that farmers build their packing and calibrating houses next to their permanent glasshouses so they save time in inspecting their staff and controlling the entire product at once, from selection to the final stage to the retailer.

#### 4.3.3.4 Turkey

Turkey is 6th worldwide in total glasshouse crops, in terms of cultivated land. This is shown in table 54.3 below:

| Table 4.3 | glasshouses surface worldwide |
|---|---|
| **country** | **glasshouses in hectares** |
| China | 1,000,000 |
| Japan | 53,518 |
| Korea | 52,189 |
| Spain | 33,750 |
| Italy | 26,000 |
| Turkey | 22,064 |
| Holland | 10,416 |
| USA | 7,016 |
| France | 8,108 |
| Greece | 4,000 |
| Israel | 3,510 |
| | |
| **Source: Mustafa Satisi, President of exports' Union in Antalya** | |

The total volume produced is three million tons. 37.8% of this consists of tomatoes, cucumbers are about 21%, eggplants are 6.5%, peppers are 8.6%, zucchini are 6.4% and 0.3% consists of beans. Watermelons and melons are mainly grown in low greenhouses. The production of lettuce, fresh onions, spinach, parsley and artichokes has also begun during the last years. Although the majority of production is intended for internal consumption, 68% of total tomato production is exported.

**The production region of Smyrna**

In Turkey, our contact person was Mr Mustafa Turkmenoglou who owns one of the biggest packing-export houses in Smyrna. From the beginning of our conversation it was clear that in this country we have three different categories of farmers: small, medium and large. The majority belongs to the first category (around 1-2 hectares of land each) who are gradually forced to sell their land to larger businesses. In case of weather damages in the crop, there is no compensation by the ministry of agriculture to Turkish farmers. The cooperative unions are almost inexistent, so the small farmers sell their land under the pressure of economic damage at cheap prices (around 4000 Euros per hectare).

The quality standards in production are common because the Turkish want to adapt to European standards. The most amazing, however, is the young age of the farmers. Due to the fact that secondary education is not obligatory, most of the workers are 14-25 years old.

Regarding the purchasing procedure, in Turkey every company has its own agriculturists who search for quality standards and select specific fields for that. Usually they select them from a fixed base of farmers they cooperate with. If the

export company uses intermediaries, then they undertake the entire quality control and packaging and deliver the products to the customer's truck.

Traditionally the major problem for Turkish exports was the plant-pathology controls. Since the country is outside the European Union, every export has to be accompanied by the phytosanitary certificate. This would sometimes cause delays and the products had to remain in the trucks for many days. As a result, the quality was degraded and Turkish products have suffered a lot from market share loss. For this reason, the Turkish government has found alternative destinations in the Greek borders, so nowadays exports are done through the customs offices of Evros, Mytilini and Rhodes. According to Mr Katopodis, from the Greek consulate in Smyrna, the main objective has been the increase of trade in both directions and the opening of new commercial routes. In this direction, the Smyrna–Thessaloniki air route and the Dikelia–Volos sea route have improved the whole situation. There's a ship three times per week from Dikelia to Volos and back, which transports mainly trucks (source: Output from the interview with Mr Mustafa Turkmenoglou, owner of packing house, Antalya).

**The production regions of Antalya and Kumluca**

Antalya is a tourist capital which is surrounded by mountains and lies next to the Mediterranean Sea. Due to the warm climate, this area has proved ideal for both tourism and eugenic vegetable crops. This is exactly what the whole area is taking advantage of, since it is one of the most financially well-developed areas of Turkey. The whole greenhouse land is around 16,000 hectares compared to about 36,000 hectares in the entire country. This is almost ten times larger than the greenhouse surface in Greece.

Mr Ahmet Giavous, who is the owner of a modern packing house in this city, has recently expanded his activities to Greece. He deals in tomatoes and other vegetables in an organised environment that ensures the quality of his final product. Although Turkey does not belong to the EU, most packers have already upgraded to satisfy European markets. In this particular packing place, everything was organised and there was not even a leaf on the floor. Every single box coming from the production line had to be inspected by agriculturists first and then palletised. Generally it was clear that inspections are applied at every stage of elaboration.

Kumluca is another agricultural city, which is about one hour away from Antalya by car. It is also a typical productive destination of tomatoes and secondarily of potatoes. There I met two Greek businessmen who started their own business just five years ago. Mr Thanasis Moschakos and Mr Onder Delioglu gave me direct

information about the employment conditions in the country. They told me that in order to find the most capable workers they have to contact intermediaries who are in charge of worker selection. Every worker has a monthly salary of 250 euros (3 times less than in Greece). Overtime, eight-hour workdays and days off are not standard at all. Regardless of the time at which an order is received, the packer can call the staff and start the whole preparation process. Most workers come from eastern Turkey and are mainly Kurds. The basic concern of the employer regarding these employees is housing. This is quite simple as the workers need only basic amenities, which are one bed and very basic cleaning facilities.

The intermediaries, as said before, play another major role. They intercede between the farmers and the traders so they fix the prices for both sides. Bargaining is done on a daily basis according to demand. Farmers generally prefer to deal with intermediaries because they offer two important benefits: first, they absorb the entire production and, second, they fund the crops' expenses and this is an unofficial commitment for the farmer.

Regarding the second-quality production which is rejected from exports, it is diverted to the local market. This is a significant volume and it is forwarded to the 70 million Turkish people. Anything unsuitable for export can be sold domestically for less than half price. Exporters from Turkey have also approached distant countries like the U.K. and this is the main reason for high quality standards.

**Export capacity**

In the tables below there's a brief description of export activity in Turkey. Tomatoes and potatoes are key export products but it's clear that many other agricultural goods contribute to the national commercial balance:

**Table 4.4**
**exports of fresh fruits and vegetables from Turkey**
**(January 2005-October 2006)**

| | 2005/01/01-2005/10/31 | 2006/01/01-2006/10/31 |
|---|---|---|
| **product** | **kilos** | **kilos** |
| fruits | 298,120,490 | 320,494,849 |
| citrus | 568,949,225 | 626,436,830 |
| vegetables | 498,734,142 | 512,959,901 |
| total | 1,365,803,857 | 1,459,891,580 |
| | | |
| **Source: Eurostat, 2006** | | |

| Table 4.5<br>top 10 Turkish fruits in exports | | |
|---|---|---|
| | 2005/01/01-<br>2005/10/31 | 2006/01/01-<br>2006/10/31 |
| **product** | **kilos** | **kilos** |
| cherries | 35,876,524 | 54,104,998 |
| grapes | 129,893,564 | 131,100,929 |
| peaches | 39,618,443 | 39,209,533 |
| figs | 9,603,825 | 8,918,450 |
| strawberries | 6,313,939 | 11,794,102 |
| apricots | 9,948,195 | 13,984,222 |
| apples | 21,199,998 | 22,427,221 |
| watermelons | 15,729,394 | 16,184,075 |
| pears | 8,582,336 | 5,260,748 |
| melons | 8,082,476 | 7,055,110 |
| total | 284,848,694 | 310,039,388 |
| | | |
| **Source: Eurostat, 2006** | | |

| Table 4.6<br>top 10 Turkish vegetables in exports | | |
|---|---|---|
| | 2005/01/01-<br>2005/10/31 | 2006/01/01-<br>2006/10/31 |
| **product** | **kilos** | **kilos** |
| tomatoes | 223,722,560 | 265,217,049 |
| peppers | 54,251,222 | 50,329,342 |
| cucumbers | 20,361,409 | 31,785,320 |
| onions | 61,414,601 | 79,637,632 |
| mushrooms | 505,812 | 959,052 |
| carrots | 60,569,281 | 36,148,041 |
| leak | 8,398,315 | 9,885,509 |
| potatoes | 75,969,087 | 15,487,134 |
| zucchini | 4,805,616 | 5,812,301 |
| eggplants | 5,183,325 | 3,551,250 |
| total | 515,181,228 | 498,812,630 |
| | | |
| **Source: Eurostat, 2006** | | |

The five biggest customers to Turkish agricultural exports are Germany (15%), Greece (12.5%), Russia (10.5%), Holland (9.2%) and Romania (7.9%). Especially in tomatoes, the production has doubled between 1980 and 2003 (source: Output form the interview with Mr. Mustafa Satisi, President of export union in Antalya).

**Further structural problems in Turkish agriculture**

Turkey is a country with small average plots. The most common type of agriculture is family business in small fragmented fields; in 2001 there were three million plots with

an average surface of six hectares. This is equivalent to 33% of the average area in the European Union. Only 15% of the total land is larger than 10 hectares and this represents 70% of the total cultivated fields. All these small fields suffer from low yield, hidden unemployment and no competitiveness. The main cause of the small area of these lands is the heritage system in the country. Although it is illegal to split up plots smaller than 0.5 hectares, this is actually a common problem. This little land doesn't offer a considerable income and therefore many farmers have to work simultaneously in the tourism industry. Apart from them, there are also some investors with larger glasshouses (average surface more than one hectare). The biggest export companies in Turkey, like the ones mentioned in the current section, own more than one hundred of hectares of modern glasshouse structures.

The market demands for high quality products force farmers to change mentality. They are obliged to invest in new technology and most of the time they cannot afford it. So they often sell their land which is gradually concentrated by more trained businessmen. These are sufficiently informed about new technologies, financial data, residue levels and legislation, whereas the main source of information for the middle-size farmer is the neighbouring grower. Dealers and wholesalers are next, while the local agronomists' stores are last. Public employees play a minor role and the cooperative unions are still distant from international realities.

Another serious difficulty is the low educational level of growers. 90% of them have not even finished high school and they can hardly read and write. So the implementation of new technology through these people is extremely hard. It has to be done through personal contact and demonstration, which increases the cost dramatically. A slow improvement of this situation is expected in the recent future since compulsory basic education has increased from five to eight years (source: Output form the interview with Mr. Mustafa Satisi, President of export union in Antalya).

#### 4.3.3.5 Egypt

**The market structure of potatoes**

Egypt grows more than 45,000 hectares of potatoes and the annual production is over 2 million tons. According to the Egyptian embassy, this product is the highest export crop and the last years the European Union has a market share of approximately 70%-90% of the total exports. It is the almost-fresh potato which covers European needs from December to April. A traditionally important customer for Egypt is the United Kingdom. After all, potatoes represent an entire business for

the U.K. and Egypt, as a traditional supplier, covers around 22,000 tons of English consumption.

The entire trade is done through two alternative channels: the Egyptian potato cartel (EPC) and private whole traders. In EPC, farmers deliver their products just like in cooperative unions. The company has to cover all marketing needs (customer research, sales guarantee, farmers' payment, research and development). The better the price they sell at the better the income for their contracted farmers. They receive only a small deposit at the beginning of each collection period to cover their basic expenses. Once the selling period is finished, the EPC has to make detailed reimbursement to all producers. This way there's increased reliability for all parties involved. The EPC has signed a trade agreement with the U.K. the last 25 years. In fact, during the last decade, it is the largest transporter of potatoes to England. The most commercial varieties are Nicola, Charlotte and Maris Peer, while experiments on new varieties are constantly done. EPC supplies the product in 20-kilo bags in such a way as to keep a sufficient level of moisture for the product shelf life. By the end of January, potatoes are packed in jumbo bags for retailers and other packers.

Regarding private whole traders, they work on a similar basis but they also use non-contracted farmers when the commercial opportunity arises. Daltex is an important private export company which specializes in the varieties Charlotte, Nicola, Maris Peer and Princess. Variety Princess is usually proposed for salads. It has a rounder shape, with a specific texture and taste. That's why this company is trying to build a competitive advantage on these special characteristics. Hana Fresh is another company that has increased production through modern technology. It has adapted to new certificates such as Tesco's Nature Choice and BRC. It also applies HACCP to the sorting lines in packing houses and broadens the supply chain with British seeds. The company becomes more focused on this market because everybody needs a satisfactory market share from the "safe" customer (Reference: "Fruit news" magazine - February 2007 - "Imports and consumption of Egyptian potato in Greece")

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**Export limitations and taxes**

Egyptian potatoes are under export quota by the European Union. This is intended to protect the domestic production and is reinforced by tariffs that each country applies to imports when they exceed the annual limit. Some restrictions, of course, for potatoes in England from December to April, allow free circulation of the product without quota (source: output from the interview with DALTEX SA, export company).

#### 4.3.3.6 Cyprus

**The market structure of the country**

Cyprus is located in southern Europe, and therefore the climate allows production of many different fruits and vegetables. There's important know-how in agriculture, since the sector has been oriented towards export for more than five decades. However, tourism has developed quickly, especially over the last five years since the country entered the European Union and started to receive European financing. The country has upgraded its tourist establishments and has become an attractive destination for many tourists who look for the combination of sea and sun in luxurious conditions. As a result, many young farmers leave their land and try to find employment in tourism. Furthermore, the seaside fields which were traditionally the most fertile have been used as sites for hotels. Therefore the renting cost for the remaining land is too expensive. In addition to that, over the last three years the production cost in fields has increased dramatically due to the lack of water. This reason has forced the government to charge high prices for water for agricultural uses. Taking into consideration the geographical location of the island, it's easy to realise that the transportation cost for delivery destinations is extremely high. Specifically for European destinations, Cyprus products have to be transferred by ferry to Greece and then by rail to the final customers. Other European producers don't incur this extra ferrying cost. These are the main structural problems of Cyprus and create a significant obstacle for future agriculture in the island.

However, local businessmen realised early that the production of high quality products should be their competitive advantage towards other exporting countries. Cyprus exports to Europe (England, Germany, and Scandinavian countries), the USA and Russia. Due to the short distance from Africa, this is also a destination of mutual transaction (Israel). Top quality products with higher standards than the local market are imported to Cyprus through Israel and are re-exported to other countries. The packing standards and quality certificates that are implemented cover all the needs of hypermarkets.

In terms of the local retail market, the super markets (traditional, discount and hyper markets) are the major participant in the sale of fresh fruits and vegetables. More than 70% of the total sales is done by these channels while the rest belongs to traditional retailers (greengrocers and street markets). Many multinational companies have seen the perspective of expansion in the country and have been operating for the last ten years. Carrefour and A-omega are the biggest hyper markets while Orphanides is the biggest national super market chain. Although the average salaries

are about 20-30% better than in Greece, organic products are not so popular. Neither wholesalers nor retailers believe that they can provide value-for-money choices for the customers. In general terms, they avoid the promotion of organic products in stores and strongly believe that the sales capacity is better with conventional fruits and vegetables. Their argument against them is that the customers do not perceive the added value in quality and refuse to pay the extra charge per kilo.

Regarding wholesalers, in this island anybody can get valuable experience of how the cooperative unions system is set up. All farmers belong to certain cooperative unions, according to the geographical area of production. The union is in charge of all marketing activities referring to agricultural goods. Every three years, the leaders of the union are elected. All members (farmers) have to vote for them, taking into account their satisfaction from previous income. This team of managers has to undertake the planning of the entire crop production, from selecting species and season to be cropped to finding the final customers. Farmers take advice from the union's scientific personnel on how to improve their production and how to implement beneficial innovative solutions. Once they start production, they deliver the entire quantity to the union. The union pays a certain deposit to them in order to cover their expenses and the final payment is done at the end of each season. As soon as the union has sold all quantities, it provides a complete analysis to the farmers-members. The analysis includes the total sales turnover to all customers. Then they deduct the total working expenses for the union, set out in a detailed list. They take also out 10% more for future investment and the rest ends up in the producers' pocket. So the higher price the unions achieve, the more profit there is for its members (source: Output from the interview with Mr. Koulis Fylaktou, general manager of Sedigep Ltd-export company).

In total, there are 22 cooperative unions in the whole island that work on the same philosophy. They are in charge of the majority of exports of fresh fruits and vegetables while a small quantity is sold by private traders. The top management of the union is responsible for the final agreements with the customers. According to these, they offer advice to the farmers on what to grow, how and when. Farmers trust this system and accept the different price policy from the union depending on the quality standards of their production. One of the oldest unions of this type is Segigep Ltd, founded 1964. In the interview we had with Mr Koulis Fylaktou, general manager of the company, we obtained all cost information presented in the paragraph below.

**The production cost of potato**

Potato is the flagship of Cyprus agriculture. Due to the excellent weather and ground conditions, this product has higher quality and taste. The cooperative unions in Cyprus noticed that very early and made efforts to place it in high-value foreign markets. As opposed to many other countries, the marketing mix for this potato was constant from the beginning of this project for all cooperative unions. The product is considered to be a totally different potato in quality, shelf life and taste. Premium packaging of 3 kilos (vertbag) is provided too. In terms of price, the Cyprus council of potato, as a governmental authority, did not ever allow cannibalisation. So it was always sold at a considerably higher price than the domestic potatoes of the countries it was exported to. However, the big challenge was to communicate to the customers that the difference in money was less than the difference in quality. This is now quite clear and this potato gains important market shares in the export countries. In Greece, for instance, it is the best selling product by far compared to the local production of fresh potato. Although the final retail price is sometimes double, it seems that the customer has been convinced about the extra quality and accepts the higher cost. The marketing department of Sedigep gave us a detailed analysis of production cost which is about 0.20 Euros per kilo. This, in more detail, is presented below:

**Table 4.7**
**Cyprus production cost in field**

| type of expenses | cost (Euros) per kilo |
|---|---|
| seeds | 0.033 |
| seeds' cutting | 0.003 |
| initial fertilizers | 0.015 |
| watering | 0.015 |
| chemical pesticides | 0.020 |
| rest fertilizers | 0.006 |
| sprays | 0.017 |
| harvest | 0.039 |
| energy | 0.015 |
| owner's labour | 0.030 |
| equipment service | 0.004 |
| total cost per kilo | 0.196 |
| | |

**Source: The marketing dpt. of Sedigep ltd, 2010**

#### 4.3.3.7 Scandinavian countries

The fresh market of the Scandinavian countries is a future challenge for Greek exporters. All data presented below clarifies the potentiality of these niche markets (source: Output from the interview with Embassies)

**Denmark**

The Danish market is in a development phase and this is due to the governmental promotional policy. This increase is expected to last, according to the financial analysts. It will turn the country into a very important client for export companies. For the time being, large suppliers of fresh fruits and vegetables come from Holland, Germany and Spain. The last one in particular maintains a stably high market share of 13% in the Danish fresh market. This comes mainly from the high quality of Spanish products and especially the citrus. Although the Danish market appears insignificant due to the small population, their consumption has still much potential for increase. However, the current competition complicates all efforts by the exporters to enter that market. New possible suppliers like Greece should create advantages compared to the current products like innovation, logistics or price.

**Finland**

Finland is another export destination that Greek companies should seriously consider. The main export country to Finland is Spain. Fresh vegetables represent 4.8% of total Spanish exports to Finland while fresh fruits represent 3.3%. The most important vegetables are lettuce (23% of total Spanish vegetables exports), tomatoes (22%), cucumber (17%), peppers (14%) and cauliflower (12%). On the other hand, the most important export fruits are citrus fruit (58%), especially mandarins and oranges, melons and watermelons (15%), apricots, cherries and peaches (14%). Even so, Spanish exports to Finland have gradually reduced during the last few years despite the increasing consumption of fresh products in the country. One of the basic parameters for fresh products inside this country is their health standards. According to customers' mentality, all domestic products are considered to be healthier than imported ones. Customers accept paying considerably high prices for local produce.

A big part of Finnish consumers claims that the Spanish production standards are superficial and the quality specifications do not cover their demands. At this point the quality-oriented Greek trading companies can gain a small market share in exports. Finnish importers of fresh fruits and vegetables keep well established relations with

many Spanish producers. They try to take advantage of these for long periods of time while they also have good market knowledge. Actually, the improvement of Spanish production has a lot to do with these contacts, as Finland belongs to the European Union since 1995 and the implementation of common legislation between the two countries is easy.

On the other side, the food market in Finland is one of the most concentrated markets in Europe. The five basic retailers (Kesko, SOK, Tradekal,/Elanto, Spar Finland and Wihurioy) own 90% of total market share. The market belongs mainly to three big companies (Kesko, Inex Partners, Tuko Logistics). Such market concentration is responsible for reduced decision making on the clients' purchase. They are forced to select from the products that are available in that specific time period. It's very rare to find same products coming from other countries simultaneously in the market. Last but not least, the legislation in Finland regarding chemicals and food safety is similar to the one applicable in the European Union and its implementation is really strict.

**Norway**

Norway is the next most interesting Scandinavian country for Greek exports. The total imports of fresh products in 2004 were about 590,000 Euros and around 25% of that amount came from Spain. The latter is the first export country to Norway market in value while it is the second in volume (117,721 tons). Next in volume are Holland and Italy, while Brazil is the first export country in volume (141,412 tons). However, the value of Brazilian exports is almost eight times less than the equivalent Spanish exports.

**Sweden**

The Swedish market is very demanding and sensitive regarding quality issues. The consumers show a steadily increasing sensitivity towards organic products. The country has a small population (approximately nine million inhabitants) compared to other European countries. However, the purchasing ability per person is very high. The consumption rate of fresh fruits and vegetables is also high and it increases around 2-3% yearly. The main distribution unions of agricultural products are about to expand to the rest of Europe. This fact is expected to lead to the creation of big wholesale groups that will play a major role in both the north European and the Balkan countries. Sweden is a part of a big market of around twenty five million consumers. Big Swedish distribution companies, which still do not face any threat in

other markets, do believe that it's a matter of time for the big multinational companies (Carrefour, Tesco, Wall-Mart) to enter the northern markets.
The distribution is characterised by intensive concentration on both the wholesale and the retail market. Through this concentration, the big retail companies have succeeded in controlling both the whole market distribution and the import of many products. This fact reinforces their negotiation power against suppliers. The prices have increased slightly while in many cases they have even decreased, during the last years. This phenomenon is due to the expansion of competition with the entry of new super markets, like the discount chains Lidl and Netto. This market is under development as well as the private labels. That's why suppliers of such products have a big chance to gain new partnerships.
As far as the typical Swedish customer's profile concerned, the characteristics may vary. But in general terms they appear well informed, they calculate the nutritional value and healthy standards of food, they have increased environmental sensitivity and they tend to correlate domestic products with the upper quality. Finally, they know very well how to evaluate the nutritional traditions of other countries, regardless of how different they may be.

**Iceland**

Iceland, finally, is the most price-sensitive country because it's probably the most expensive food market in Europe. Food prices are about 42% higher than the average for the European Union. Additionally we should mention the smaller product assortment compared to the other countries' super markets which is related to the protectionism of local production. Another basic reason for the overpriced products is the hard concentration of the distribution and retail market. This leads to very little competition and price cartels.

#### 4.3.3.8 China

In the case study of tomato, China seems to be the new opponent in the world trade. Although the country just started producing this crop in the mid 70's, the current production is about 4-5 million tons per year. The majority of this production is intended for juice. For the moment, the country is third worldwide in tomato production. Actually, the target is the further increase of production in order to overcome specific problems. These are not related to equipment and installations, which are considered to be the best in the world. On the contrary, these problems refer to the production and the distribution channels which suffer from low speed and time consistency. The instant problem is that many quantities of tomato rot before

they reach the elaboration industries. There are also some inadequacies expected in the production due to plant diseases and lack of watering abilities, but these factors are considered temporary and the general belief is that they will be solved quite easily. Furthermore, the productive season for tomato in China is short and many mistakes are done by farmers due to their inexperience. For instance, some American farmers that visited the country noticed that in many cases the plants had been overwatered. This caused the development of fungus that destroyed part of the production (Source: http://www.westernfarmpress.com)

Despite all these difficulties, the Chinese tomato industry flourishes. Chinese traders sell their products in the local market and in exports. They mainly export to the European Union, to Russia and to a lesser extent to the USA, although in quality they are below their competition. Especially in quality certification, there has been a lot of talk about the ISO standard. This is a series of certification institutes in 157 countries and it is also considered the organisation most responsible for establishing standards worldwide. The fact is that only 25% of Chinese plants are certified by ISO. Chinese people are aware of the importance of food safety. However, they should comprehend that a possible problem in tomato safety would probably cause new problems in the worldwide tomato industry. The large lands and sufficient water stocks in combination with the rapid financial development lead many multinational companies to China. They foresee the benefits from both the supplier's and the consumer's part. All indications show that there's plenty of commercial interest in this Asian country on the tomato industry.

China and the Scandinavian countries have not been analysed in this project. However, they appear great future interest, as shown in chapter 6 (conclusions).

## CHAPTER 5: PROJECT FINDINGS

To make a fair term comparison for the same products among all countries, it is important to have a common base of packaging and remaining technical specifications. In the case of potatoes, all data refer to 25 kilos net. Calibre is 50mm+ and figures refer to brushed product (not washed which is premium and more expensive). The typical commercial presentation for tomatoes is carton box of one layer with nests. Its dimensions are 40x60cm and the specifications of product are calibre 67mm+ (200-220 gr. per unit). The table presenting final costs in Athens central fruit market has already included packaging and transportation in the price of the product. All data refer to average prices of the last three years (2007-2009) so any statistical error by unexpected fluctuation of price will be eliminated. The field prices mentioned in this chapter are based on the analysis of the questionnaires and the interviews. On top of that, prices on table 5.1 refer to farmers' side and don't include any intermediate merchant's profit. This should be crystal clear to any reader in order to avoid any ethical issues with dealers. After all, this study does not intend to criticize any commercial policy but to develop flexible solutions for every part-farmers and traders.

| **Table 5.1** | **Prices (Euros) DDP to Greece** | |
|---|---|---|
| **tomato** | | |
| **country** | **DDP price** | **DDP price Greece** |
| **Poland** | 0.85 | 0.36 |
| **Turkey** | 0.37 | 0.36 |
| **Fyrom** | 0.28 | 0.36 |
| **potato** | | |
| **country** | **DDP price** | **DDP price Greece** |
| **France** | 0.24 | 0.25 |
| **Spain** | 0.27 | 0.25 |
| **Turkey** | 0.27 | 0.25 |
| **Egypt** | 0.22 | 0.25 |
| **Cyprus** | 0.33 | 0.25 |
| | | |
| **Source: Summary of the analysis in chapter 5** | | |

### 5.1 Results' presentation by country

#### 5.1.1 The case study of Greece

The rest of this section refers to the analysis of farmers' questionnaires. Around two hundred questionnaires were given to farmers of the two products (tomato and potato). The sample of farmers was selected by the most known productive areas of these products and there was a constant effort to avoid amateurs who would lead the research to misleading conclusions. In the case of tomato, the main cultivated areas to focus on for the questionnaires sere the Island of Crete, the south and west Peloponnesus (Messenia and Ilea County). Regarding potato, the farmers were located in both south and north Greece since this product is grown twice per year (spring and autumn production). The basic productive areas are west Peloponnesus, east Macedonia and Thrace. In the same geographical areas some cooperative unions and wholesalers were also interviewed. Some of the last were optionally importers and therefore they have testified their experience about imported products, prices definition and foreign cultivation methods. At this point, I should confess one peculiarity of Greek agriculture, which is the small size of plots used. This is a big drawback for cost reduction compared to rest countries as explained in chapter 5.

Examining one by one the research statements and research hypotheses mentioned in chapter 4, we end up to the final conclusions:

1. The average production cost per kilo for potato is 0.21 euros and for tomato 0.16 euros.
2. The average production cost per kilo for tomato is 0.18 euros for glasshouse crop and 0.12 euros for hypaethral one.
3. The average production cost per kilo for potato is 0.24 euros (2 crops per year) and 0.14 per kilo (1 crop per year).
4. It's not clear whether the attitude of farmers towards imported products is affected by their age or not. There was not sufficient number of answers in this field.
5. Education of farmers seems to affect their attitude towards imported products. Farmers with primary school education agree that they wouldn't buy imported products in case they were of better quality than the Greek ones. Farmers with University education appear uninterested on this issue.
6. 
    - Farmers with annual income 10,000-20,000 euros barely agree about using expensive equipment while the ones with over 50,000 income strongly agree.

- Only low income farmers (10,000-20,000 euros) pay extreme attention to price during their equipment purchases.
- Farmers with income 30,000-50,000 euros appear neutral to search for special promotions for equipment purchase while the ones with income 10,000-20,000 do search for that.
- Farmers with high income (over 50,000 euros) don't search for cheap prices of agricultural equipment on newspapers and magazine. Even the ones of the lower range (10,000-20,000) appear indifferent too.
- High income farmers disagree that they are considered mean by their colleagues while the lower income farmers tend to ignore about such a characterization.

7. The age of farmers also affects incurred costs of their crops. Younger farmers make the most expensive investments in their cultivations.
8. The higher income farmers invest the most in their business.
9. There is no important observation statistically about the relation of age and the psychographic characteristics of farmers (how they perceive themselves as personalities compared to rest European competition).
10. Farmers of Primary school education do not use the internet for their equipment purchases. If they are university graduates, they tend to be more familiar with internet.
11. There is no important observation statistically about the effect of age, income and education in farmers' approval towards biological crops.
12. The lower income farmers don't care to select expensive and branded chemicals for their crops while the high income ones do use only expensive ones.
13. Irrespective of age and education, farmers don't have any different opinion about the "value for money" of Greek products. On the contrary, if we check the income then it comes up that the lower level farmers slightly agree that quality and price are satisfactory for Greek agricultural production. The higher income farmers, are strongly convinced about it.
14. High school graduates accept the nutritional value of Greek products. The university graduates are strongly convinced about it. In a nutshell, the last are documentary convinced that the quality they produce is the best possible.
15. The correlation of storage for own production didn't show any important difference statistically compared to education or age

16. Generally they accept the quality of European production, irrelevant the age and education.
17. They almost reject the quality of non European production, irrelevant of their age and education.
18. Farmers with income more than 30,000 euros per year, pay attention for expensive brands and ignore any cheap promotions on newspapers or agricultural magazine. The opposite occurs with the low income ones. Another obvious relation seems to appear between the parameters of income and owned land. The bigger cultivated surface is related to the higher income.
19. The big farmers (more than five hectares), make precautionary use of fertilizers and chemicals. The smaller ones do not examine seriously such an issue.
20. There are not any clear outcomes about reduction of cost for farmers who make precautionary use of chemicals and fertilizers.
21. Farmers who invest in their business do believe in the future of biological crops and wish to start with these methods in the near future.
22. The farmers who incur most costs for their crops are a little familiar with the use of internet for alternative purchases. While the ones spending the least know almost nothing about internet use.
23. Farmers with the biggest land have succeeded in minimizing their costs taking advantage of economies of scale. On the contrary, farmers with the minimum surface tend to be more amateurs and their costs increase dramatically.

All the above conclusions will be described analytically in section 5.3. To summarize with Greece, I present the next table of final costs (product per kilo – DDP Athens). We should keep in mind that these figures refer to DDP price, delivered to central fruit market of Athens, without any margin for the farmer yet. Furthermore, the average cost for potato, from the analysis of questionnaires, seems to have two different levels. 0.24 per kilo for more amateur farmers and 0.14 per kilo for the professionals who already work on a contract basis with their customers and make “clever” purchases to minimize their costs. On the table below we keep the 0.14 since the purpose of this study is to emphasize on the best choices per country.

| Table 5.2 | cost (Euros) per kilo in Greece | |
|---|---|---|
| | tomato | potato |
| **field** | 0.12 | 0.14 |
| **glasshouse** | 0.18 | |
| **packaging** | 0.1 | 0.05 |
| **transport** | 0.08 | 0.06 |
| **t.cost per kg** | 0.36 | 0.25 |
| | | |
| **Source: Summary of the analysis in SPSS of the case study of Greece in unit 5.1.1** | | |

### 5.1.2 The case study of France

Regarding the most commercial size of potato (50mm+) that we examine here, the production cost per kilo is around 0.10 to 0.12 euros. This is the price of the bulk product from the field without any further manipulation. If we add the packaging cost for 5 kilos net and the transportation to Greece then we end up with the DDP (Delivered Duty Paid) price of French potatoes delivered in Athens central fruit market being 0.24 Euros per kilo (table 5.3):

| Table 5.3 | cost (Euros) per kilo in France |
|---|---|
| | potato |
| **field** | 0.10 |
| **packaging** | 0.04 |
| **transport** | 0.10 |
| **t. cost per kg** | 0.24 |
| | |
| **Source: Summary of the case study of France in unit 5.1.2** | |

However, both French exporters and Greek importers confess that the main business between the two countries is due to the longer storing period of French product. They mainly export to Greece during lack of Greek production. They manage to store the products, in controlled atmosphere chambers, for at least 4-5 months. This way, they extend their sales period and achieve higher prices (BUCHE SA).

### 5.1.3 The case study of Spain

According to PATATAS MAMITAS SA company, the farmers' expenses are almost the same as in France. However, mechanical processes have been implemented more intensely in the entire job. This provides financial savings in post-harvest expenses. The entire process of collection from the field is 100% mechanised and

also, in order to reduce transportation costs, the raw material is collected in big bags of 1000 kilos, from the field to the packing house. Big exporters are also aware of modern storehouse chambers with full control of temperature and moisture. The clients' technical qualifications demands are very strict, so the machinery standards in terms of calibration, packaging, spots, soil etc. are very high. Customers very rarely request bulk product. Actually, in many cases they purchase washed potatoes in plastic bags of fixed weight. Regardless of the price, they seem to select clean product more often, even though they have to pay a little more.

To summarize, the total production cost of Spanish potatoes and the other factors of cost (packaging, transport to Greece) are as follows:

| Table 5.4 | cost (Euros) per kilo in Spain<br>potato |
|---|---|
| **field** | 0.10 |
| **packaging** | 0.02 |
| **transport** | 0.15 |
| **t.cost per kg** | 0.27 |
| | |
| **Source: Summary of the case study of Spain in unit 5.1.3** | |

These figures were also cross-checked through comparison of the DDP prices of Spanish potatoes vs. DDP for Greek potatoes. Using intranet files from my own company, I went through the historical evolution of these prices for the last 3 years between the two countries. During the same periods of the year, it appears that DDP prices for the Spanish warehouses of the Dia super markets were 10%-30% cheaper than for the Greek warehouse. This comparison always refers to the same quality and packaging. In other words, potatoes produced in Spain are on average 20% cheaper than the ones produced in Greece (farmers' costs). This is also proved in the relevant tables above. However, due to extra transportation costs, the exporting of Spanish potatoes to Greece seems rather impossible. However, Greek farmers appear to use less advanced cultivation methods compared to their Spanish competitors.

### 5.1.4 The case study of Poland

As a whole, the total price for the product Polish tomato DDP to the Athens central fruit market appears on the table below:

| Table 5.5 | cost (Euros) per kilo in Poland<br>tomato |
|---|---|
| **field** | 0.60 |
| **packaging** | 0.07 |
| **transport** | 0.18 |
| **t.cost per kg** | 0.85 |
| | |
| **Source: Summary of the case study of Poland in unit 5.1.4** | |

It is now clear that Poland has the highest production cost and this is the reason of limited exports to Greece in specific periods of local damage in production. On the other hand, in section 5.5.4 we will investigate the possibilities of expanding export activities from Greece to Poland for the rest of the year. We should also keep in mind that due to the very cold winter in the country, the control of any production is totally impossible. Polish tomato production lasts from May to October. For the other six months the country only imports (tomato cannot be warehoused anyway for long periods). This is the main advantage for Greece to be analyzed later.

### 5.1.5 The case study of Turkey

#### 5.1.5.1 The farmer's production cost

By summarizing all the above interviews we arrive at the total cost of tomato and potato in Turkey. This is cheaper than in Greece due to lower labour cost and lower prices in agricultural equipment. The legislation imposes lower taxes on these categories so farmers tend to save 0.02-0.03 euros per kilo in the net cost of product from the field. By making the same comparison as in the previous countries, we end up with the final DDP prices mentioned below (delivery to Athens central fruit market without any theoretical margin):

| Table 5.6 | cost (Euros) per kilo in Turkey | |
|---|---|---|
| | **tomato** | **potato** |
| **field** | | 0.12 |
| **glasshouse** | 0.15 | |
| **packaging** | 0.1 | 0.05 |
| **transport** | 0.12 | 0.1 |
| **t.cost per kg** | 0.37 | 0.27 |
| | | |
| **Source: Summary of the case study of Turkey in unit 5.1.5** | | |

### 5.1.6 The case study of Egypt

#### 5.1.6.1 Production cost

Egypt is an ideal source of potato supply for the whole of Europe. The sunny climate during winter makes it appropriate for the potato harvest. Besides, the competition from Europe is limited since most farmers do not collect potatoes during the winter.

However, many changes have taken place during the last decade in Great Britain's imports. The market share of Italy, which was historically the first in this winter market, has declined due to revolutionary methods in production and storehousing by British farmers. Besides, exports from Israel, which is the main competitor of Egypt, have steadily increased. From 2,600 tons in the mid-90s they have increased to more than 60,000 tons today. Morocco at the same time has entered the competition. Egyptian farmers still believe that they have all benefits of the English market, even though they face legal obstacles in ports. Inspection delays also cause further expenses and quality deterioration.

British clients, on the other hand, tend to avoid high prices for fresh quality potatoes. They have the alternative choice of domestic potatoes. The development of new storehouse methods guarantees the good quality of local harvest for as long as eight months in storage. This is aimed at reducing the import of potatoes by England.

Finally, we should emphasise the two main reasons of export limitation: the legally imposed quota and the quarantine diseases that may occur in Egyptian crops and prohibit any exports. Such cases have occasionally occurred in Egyptian fields causing potato rot. The government is paying close attention to quality control, while industries try to fight rot either with new varieties or with new "virgin" land. Only experienced farmers can grow such species and the whole process is under strict inspection.

The entire collection is done manually because the labour cost is still very cheap: approximately two dollars per day. Potatoes are placed in cloth bags of 20 kilos for better shelf life, and transportation to Europe is done by boat (source: Output from the interview with DALTEX SA, export company , Egypt).

Around 0.12-0.13 euros per kilo is the total harvest cost, including packaging. If we also add transportation to Greece (Piraeus port), the extra packaging in 5-kilo nets and delivery to the Athens central fruit market, then the total cost in comparison with the other countries is shown below:

| Table 5.7 | cost (Euros) per kilo in Egypt<br>potato |
|---|---|
| **field** | 0.12 |
| **glasshouse** | |
| **packaging** | 0.05 |
| **transport** | 0.05 |
| **t.cost per kg** | 0.22 |
| | |
| **Source: Summary of the case study of Egypt in unit 5.1.6** | |

### 5.1.7 The case study of FYROM

FYROM is located above the northern borders of Greece. Due to the climate, production in this country is mostly from July to September. Therefore, imports of tomatoes to Greece are very common during this period. The quality standards in the country are very low and legislation still allows some chemical pesticides which are abolished in the European market. Although many official complaints to the Greek ministry of agriculture have been made regarding the quality control of such imports, they still appear in the Greek market and threaten other tomato producers because of their low price. Even worse, the mislabelling of the country of origin is very common in these imports. Some traders illegally gain huge profit margins by this method, but the worst danger is the uncontrolled product that reaches the consumer's plate. Although many accusations have been filed to the ministry, the authorities have still not solved the problem completely. From the commercial point of view, these traders create unfair competition compared to domestic and other origins in terms of quality. They also push prices down and force some companies to sell below the break-even point.

The main destination of the production is the local market plus Serbia and Bulgaria. However, prices always affect the final activities of every enterprise. Crop technology is quite old. They use cheap plastic to cover their glasshouses and this is easily broken up by the weather. This means that FYROM is not necessarily able to export to Greece and other countries every year. In case on weather damage, production may not be enough for the domestic market and in these cases the country needs to import low quality product from neighbouring countries.

The production cost (field price) is around 0.08 – 0.10 euros per kilo (Source: interview with Mr. Gorgi Arnaudov, CEO of Euromik Glasshouses Valandono). So the final cost price table for the comparison with other countries is below:

| Table 5.8 | cost (Euros) per kilo in Fyrom tomato |
|---|---|
| **field** | |
| **glasshouse** | 0.08 |
| **packaging** | 0.05 |
| **transport** | 0.15 |
| **t.cost per kg** | 0.28 |
| | |
| **Source: Summary of the case study of Fyrom in unit 5.1.7** | |

### 5.1.8 The case study of Cyprus

To make a fair term comparison with other countries we have analysed the cost DDP for the Athens central fruit market. This refers to product in 3-kilo vertbag which is the most typical packaging. Field cost is based on table 4.7 (chapter 4). No commercial profit margin is included on the table below:

| Table 5.9 | Cost (Euros) per kilo in Cyprus potato |
|---|---|
| **field** | 0.20 |
| **glasshouse** | |
| **packaging** | 0.05 |
| **transport** | 0.08 |
| **t.cost per kg** | 0.33 |
| | |
| **Source: The marketing dpt. Of Sedigep ltd, 2010** | |

## 5.2 Comparative tables with all countries' costs

Before reaching conclusions and recommendations, we should gather all data on costs from chapter 5 in the comprehensive tables below:

| Table 5.10 | | | |
|---|---|---|---|
| **Comparison of tomato DDP prices** | | | |
| **country** | **DDP price** | **DDP price Greece** | **% difference** |
| **Poland** | 0.85 | 0.36 | -136.11% |
| **Turkey** | 0.37 | 0.36 | -2.78% |
| **Fyrom** | 0.28 | 0.36 | 22.22% |
| | | | |

**Table 5.10**
**Comparison of potato DDP prices**

| country | DDP price | DDP price Greece | % difference |
|---|---|---|---|
| **France** | 0.24 | 0.25 | 4.00% |
| **Spain** | 0.27 | 0.25 | -8.00% |
| **Turkey** | 0.27 | 0.25 | -8.00% |
| **Egypt** | 0.22 | 0.25 | 12.00% |
| **Cyprus** | 0.33 | 0.25 | -32.00% |

**Source: Summary of the analysis in chapter 5**

This data refers to comparison of costs per product among all countries examined. The final column compares Greek production vs. others and presents the cases where Greece appears to be more competitive. The whole analysis in the rest of this chapter (sections 5.3 to 5.6) is based on these figures. Every country case has been studied separately to support us with the necessary information that explains why costs in Greece are higher than in other countries. Therefore we analyse what should be done to improve the agricultural sector in Greece and reinforce its competitiveness.

### 5.3 Findings regarding Greek farmers

A deeper analysis of the table above makes it clear that Greece is not a very expensive country in terms of agricultural production cost. Eight cases in total were examined for the needs of this study. Three of these refer to tomato and the other five to potato. Overall, in three out of the eight cases, Greece seems to be more expensive. These are the cases of FYROM for tomato and France and Egypt for potato. In each one of these cases we reach different conclusions and recommendations as shown below. However, we should first clarify the basic profile and mentality of Greek farmers as these arise from the hypotheses control in Section 5.1.1. This is essential in order to understand the differences with other countries and to proceed with future suggestions. In tomato, Greece is more expensive than FYROM which is still outside the European Union. It is not obliged to follow European legislation so the availability of more and cheaper chemicals makes for lower cost in production. However, the quality standards are not the same as the European ones and therefore it is not a fair terms comparison. The same phenomenon occurs with

Egyptian potatoes, while the French ones are fairly comparable and this should lead to more detailed analysis of the situation. There are some drawbacks in Greek agriculture, like small average land, which has never been solved. On the other hand, further structural problems like old fashioned methods of cultivation, changes in the trading procedure and innovative crop planning are issues that can be treated on a long term basis. In Section 5.6, all alternative solutions are exposed in detail.

Even among Greek farmers, there are big differences in mentality and business vision. From the questionnaires we realise that the more experienced cultivators have dropped their production cost to 0.14 Euros per kilo of potato. For non-professionals, the cost has increased to 0.25 Euros or even more. This proves the big variations in experience and relevant knowledge. There's still a big percentage of the older generation with low education involved in Greek business agriculture. These are people with primary school education and cannot adapt to new technologies like the Internet, different sources of purchase and innovative cultivation methods. It is very important to note that the less educated the farmers are, the more negative they become towards imported products. The low-income farmers usually have additional sources of income like animal breeding. They do not pay attention to new technologies and they refuse to use modern equipment on their crops. They usually search only for low price but this cannot improve the yield and therefore cannot decrease their cost. Due to that, they gradually lose competitive advantage vs. other countries. As a result, they gradually face more difficulties in selling their production and are the first to face the danger of losing their business. On the contrary, the analysis has shown that higher income farmers (over 50,000 euros annually) do invest in their crops and have been convinced about economies of scale by such choices. It also seems that the farmers' age plays a catalytic role in positive decision making on investments. The younger growers wish to spend more than the older ones. Sometimes, in small village communities, people pay much attention to their friends' opinion. Lower-income cultivators are more fearful of being characterized as "mean". They don't wish to buy well-known brands of agricultural equipment, as opposed to the higher-income growers.

The control of hypothesis about the "value for money" of Greek products has proved something strange. Only rich farmers strongly believe in the higher quality of their production. The rest have not made any considerable observation on this quality issue. Probably this is why they still react to quality step-up. As far as their nutritional value is concerned, their opinions vary again. University graduates are convinced that the quality they produce is the best possible while primary education graduates have not yet clarified this value. Regarding the imported fresh products, they all

agree that European production is better in quality than non-European, irrespective of their age and education. Another self-explanatory result is that the rich farmers own largest plots of land and usually make precautionary use of chemicals to protect their harvest. These are adherents of biological agriculture as described in detail in unit 5.4.

The Internet unfortunately remains an unused source of information for the vast majority of Greek farmers. Only a small percentage of them (usually higher income farmers) use it as an alternative source of purchase. Finally, farmers with the largest land have succeeded in minimising their costs by taking advantage of economies of scale. On the contrary, small non-professional farmers have increased a lot and have become uncompetitive.

### 5.4 The present and future situation in Greek biological agriculture

All data show that biological agriculture in Greece is still under development. Although sales tend to increase over the last ten years, there's still a lot of work to be done in expanding the cultivated lands and increasing customers' awareness of these products. According to farmers' questionnaires in section 5.1.1 (research hypotheses 8 and 15), Greek farmers generally are not convinced enough to turn to biological crops. It is a big disappointment that even younger generations react to such an evolution. Regardless of their age and education, they do not seem to care more about organic farming. However, the minorities of businessmen agriculturists who invest more in their job express their interest in this new trend and they wish to start such crops in the recent future. It is necessary for them to get applicable advice from their agronomist consultants; otherwise such a desire will never actually take place (Source: Output from the SPSS analysis in unit 5.1).

Biological products and especially biological fruits and vegetables are not considered a luxury any more. They got their market share based on the big nutritional scandals that very often appear in the media. Even if their prices remain high, sometimes they are three times more expensive than equivalent conventional products. The increase of exclusive stores for organic products and exclusive street markets has contributed to the rapid increase of this market between 1999-2006. It has grown seven times more during these years and this evolution was also aided by the appearance of hyper markets, traditional stores and discount super markets to the biological sector (Source: ICAP, 2006). Actually, most super markets try to emphasise these products in special selves while in hyper markets there are specific fully organised biological

departments. In 2006, 50% of total biological sales belonged to traditional stores and the other 45% to super markets. Today however, the general attitude is that traditional markets have lost their market share which has moved to the super markets. The best selling products in fruits and vegetables are organic tomatoes (50.8%) and organic potatoes (3.8%). Other vegetables cover 10% and other fruits 2.3% of total sales in this area (Source: ICAP, 2009).

The constantly increasing consumer demand for biological products has led many multinational companies to start activity. Big food companies have dealt with frozen fruits and vegetables and they noticed an increase of 48% in sales (2008 vs. 2007), although their prices are about 25% more expensive than their equivalent conventional products (Source: "*Food and drink*" magazine, 2009, data regarding Vivartia Gaea company, pp. 22).

All clients are aware of a big range of organic products in the biological street markets. These have different operating hours than conventional markets and have spread to most geographical areas of Greece.

The development of organic farming in Greece during the years 2002-2007 is really eruptive. The cultivated land has increased by 285.73% during these years. An important increase is also observed in the market of these products (Source: ICAP, 2008). The following tables present the market trend of biological foods in value:

**Table 5.11**

**local market of biological food 1996-2007 in euros**

| year | value | change |
|---|---|---|
| 1999 | 7,600,000 | |
| 2000 | 12,900,000 | 69.70% |
| 2001 | 15,500,000 | 20.20% |
| 2002 | 18,500,000 | 19.40% |
| 2003 | 24,000,000 | 29.70% |
| 2004 | 30,700,000 | 27.90% |
| 2005 | 39,800,000 | 29.60% |
| 2006 | 51,800,000 | 30.20% |
| 2007 | 64,750,000 | 25% |
| | | |

**Source: ICAP SA**

| Table 5.12 | | |
|---|---|---|
| market of imported biological food 1999-2009 in euros | | |
| year | value | change |
| 1999 | 1,900,000 | |
| 2000 | 3,100,000 | 63.20% |
| 2001 | 5,500,000 | 77.40% |
| 2002 | 9,500,000 | 72.70% |
| 2003 | 16,000,000 | 68.40% |
| 2004 | 19,000,000 | 18.80% |
| 2005 | 23,000,000 | 21.10% |
| 2006 | 33,700,000 | 46.50% |
| | | |
| Source: ICAP SA | | |

The consumption of biological products increases gradually in both super markets and convenience stores. Young parents and other people who are sensitive about health nutrition and environmental protection, first buy biological vegetables and fruits and then make the rest of their purchases in super markets. The future in Greek agriculture clearly belongs to organic crops (Source: interview with Mr. John Kourtides, CEO of QWays Certification Company in biological production and trade, 2010). He also stated that the future belongs to biological and quality products, especially after 2013 when all subsidies from the European Union will stop. He encourages farmers to take advantage of the excellent climate conditions in Greece and expand this business in time. The small enterprises of about half to one hectare are not actually liveable. But once the farmer overpasses a critical land area, which differs from product to product, then the comparative advantage becomes very strong. The critical land area is the minimum surface that a farmer has to grow in order to gain a satisfactory income for his living. This depends on the product, because each crop has different costs and item selling price.

In Greece the biological market is still below the average figures of other European countries like Great Britain, Germany or Scandinavian countries. In these countries biological products represent as much as 5% of total sales while in Greece this is about 1%. However, there are many chances to expand since the rate is increasing by 20%-30% yearly. The table below presents the number of companies dealing with biological vegetative production:

| Table 5.13 | | |
|---|---|---|
| **evolution of companies in vegetative biological production** | | |
| **year** | **value** | **change** |
| 1993 | 165 | |
| 1994 | 489 | 196% |
| 1995 | 639 | 31% |
| 1996 | 1109 | 74% |
| 1997 | 1683 | 52% |
| 1998 | 2,350 | 42% |
| 1999 | 2,611 | 12% |
| 2000 | 3,036 | 17% |
| 2001 | 3,419 | 20% |
| 2002 | 3,343 | 2% |
| 2003 | 3,321 | 5% |
| 2004 | 3,804 | 15% |
| 2005 | 5,738 | 52% |
| 2006 | 7,641 | 28% |
| | | |
| **Source: DIO Certification company** | | |

The major issues that have to be taken into consideration for the future of Greek biological farm are:

1. Organic farming is not just a new activity but it's a totally different production philosophy which applies to anybody who can feel nature, comprehends its needs and has the sensitivity to produce without overspending its sources.
2. Organic farming can be an attractive financial activity with important effects on the agricultural income. The producer can ask for higher prices due to the better quality of production.
3. There are still many chances for future development. The percentage of organic crops in Greece is still much lower than the average in Europe and actually Greece is an importer of biological products.
4. The main problems are focused on the lack of accurate information, the reinforcement of client's loyalty, the lack of marketing and the poor technical advice for farmers. This is linked to the poor technical knowledge of agronomists and the minimum research done on this area (Source: Output from the interview with Mr. John Kourtides, CEO of QWays).

### 5.5 Localisation of niche markets

In this section we make an effort to specify niche markets on which Greek agriculture should be focused. These are chances that are applicable both within and outside the Greek fruit market. The latter are either export opportunities (increase of Greek

f&v market share) or import opportunities (commercial challenges for imported products inside Greece during non-productive periods). In more detail, regarding the domestic market of Greece we should specify our recommendations on:

- Conventional product market
- Biological product market
- Imported products

In terms of foreign markets (other countries except Greece), the suggestions focus on competitive advantage for exports to Greece and also on reinforcing trade among these countries.

### 5.5.1 The perspectives for the conventional product market inside Greece

As shown in the analysis of section 5.1.1, Greece does not suffer so much from high production costs compared to the other countries in our analysis. Although I had a strong feeling during the beginning of this project that my country would prove to be non-competitive, the final results contradicted me. Greek farmers do very well in managing their costs, especially the potato producers who work on a contract basis. We noticed that their field costs vary from 0.14 per kilo (contract basis) to 0.24 per kilo (individuals). In fact, in northern Greece where there's only one productive cycle per year, they are more focused on their purchases and their crops' harvest. These farmers have made contracts with local traders who are in charge of the whole process from seeding to selling their production. They work on a win-win basis which means that traders have hired their own agronomists to scientifically support their contracted members. They offer the entire know-how for maximization of output and quality. In addition, they have to discover cheaper alternative purchases than the current stores of agricultural equipment, in order to keep costs low. This combination of cheap purchases together with higher performance in the field lowers the production cost and leads the products to more approachable markets. In tomato, we have a big variation of yield between glasshouse and outdoor crops. On an average basis, farmers make around 60-80 tons per hectare from outdoor crops and around 120-160 tons per hectare from glasshouse crops. Their production costs per kilo are around 0.12 Euros for outdoor and 0.18 for glasshouse crops. At this point, we have to note a contradiction in the tomato crop. The outdoor crop has basically one productive cycle per year, which means that the harvest is brought in during the summer period only. It seems from the questionnaires' analysis that most non-professional farmers work on this type of cultivation. They are basically older and focused on more traditional methods than younger ones. If we also take into

consideration that the shelf life of tomato is quite short, we easily understand that such products cannot be storehoused for long periods and have higher prices after their production period. Although this crop seems to have low cost, it cannot be expanded more because it is quite dependent on the climate conditions. In other words, for most of the year (nine out of the twelve months), the entire tomato competition in Greece is based on glasshouse crops. If we look at the yields for Greece versus other countries, the glasshouse productions of Turkey and Poland are considerably higher. They are approximately 200-250 tons per hectare. On a technical side the main reason is the training of the plants and the application of a hydroponic substratum. Greece should follow such technologies and become more aggressive in the local market.

Plant training has to do with the maximum height that a tomato plant is allowed to reach. Farmers tie the plants at specific points with cord and this allows the farmer to produce more fruit from each one. The bigger the plant becomes the longer production cycle it has. The tomato's properties are based on the inflorescences per plant. A long plant can produce more inflorescences and therefore more fruit.

Another topic for consideration is the hydroponic substratum which is the substitute of soil. Roots of the plants are placed inside this, instead of the soil. Many soil diseases can be avoided this way since the plant does not touch the ground. Such a vigorous plant can provide more fruit of better quality. Unfortunately, many farmers refuse to implement such technology because they are afraid of the theoretically high initial cost. However, they have to make the financial analysis which clearly proves that the extra output covers the additional cost.

There are still many chances to expand consumption within the Greek market. Consumers do not always realise the differences between so many varieties of tomatoes and potatoes. That's why the future target of retailers should be to specify all these differences and support each product in its market. The consumption models, as they appear on the super market shelves, introduce many particularities which should be analysed deeper such as:

- The classic tomatoes and the cluster tomatoes have the best awareness. Almost 98% of customers prefer to buy these products.
- The cherry tomatoes are second in the customers' choice.
- The external appearance of the product is the key factor in being selected by the clients. Customers tend to pay attention to the package while they do not seem to recognize the difference in varieties.

- Cyprus potatoes have the biggest market share in Greece although they are more expensive compared to other Greek varieties. Even in discount super markets which traditionally attract lower income customers, these potatoes still remain the best selling product. Clients claim that these potatoes have better freshness and longer shelf life.
- Many efforts from retailers have been done for separating potato varieties according to cooking properties. However, clients do not yet recognize this differentiation. The best selling potato product is the variety “Spunta” which can be used with all dishes, both fried and cooked.

This market study within super markets has shown that there are four different types of clients:

- Approximately 30% of the clients pay attention to the taste but the basic criterion for them is normal price.
- 25% of clients purchase according to quality. These people usually prefer the more traditional varieties.
- 25% of them select pre-packed products and they usually prefer varieties that cook fast.
- The last part (10-15%) gives more emphasis on innovation when making their purchases. They look for new sizes, colours and shapes in the market.

Therefore the future target of seeding companies is to discover new varieties which are more adapted to current needs and desires of customers. That’s why it is very important to stress the large range of existing varieties (Source: output from the interview with Mrs. Elena Ozeritskaya, customer care department of the Syngenta SA Company in Europe).

It’s quite impossible, of course, to weigh all the factors that affect the success of a crop. However, many of them can be controlled and improve farmers’ profitability. The increase of production and innovation are the two main weapons for increasing profit margin but the most essential is to know exactly what the market demands are. The tomato and potato industries have always faced similar problems with their crops. In total, these are four: crop planning, the field’s age, product compatibility and the weather. Two out of these four factors (weather and field age) cannot be controlled by the farmer. However, crop planning and the innovation of new species (abandonment of old ones) are vital factors for the agricultural industry. In practice, the cooperative unions have to focus their marketing on the future trends of the markets. The forecast of crops has to be based on real knowledge of the trade

because we need to know what the market demands in order to arrange what to grow.

Apart from crop planning, it is very interesting to move gradually from conventional to certified products. The certified production (integrated crop management or biological agriculture) is a unique way to guarantee customer satisfaction. All dealers ask for these certificates to reinforce their customers' loyalty (Source: Output from the interviews with traders). They advertise this upgrade of quality. However, not all clients can afford the extra price for certified products. So a small part of distributors' needs is covered by conventional products at lower prices.

To sum up, we should confess that the best diversification is the implementation of globally approved varieties with common quality standards. The large quantities of such a production together with the implementation of a common packaging style can provide certified products with lower costs. This is the expected competitive advantage for dealers.

### 5.5.2 The perspectives of the Greek biological market

The perspectives for the future of organic products are very optimistic. The increase of sales is due to the increasing demand by customers. They are affected a lot by the repeated nutritional scandals presented in the media. So the issue of food safety is a major topic of discussion nowadays. Clients ask for alternative fresh products with a quality guarantee and healthier production methods than conventional fruits and vegetables.

The increase of biological fresh fruits and vegetables sales is about 25-30% on an annual basis (Source: interview with Mr. George Lathouras, Marketing Director in organic products for the super market AB, 2009). These data refer to the year 2008, because during the last two years the financial crisis has also affected this sector, as shown in detail at the end of this section. The increase is mainly due to the change of clients' preferences and mentality after the nutritional scandals in the mass media. Even so, the local production of organic goods is not enough to cover domestic needs. This gap applies to almost all products except for citrus and is covered by imports. The customers of this category tend to be loyal and insist on buying organic goods according to their financial ability. The price difference is still very high (around 40-50%) compared to conventional production. Customers would be even more if this price gap was less. However, the market share of biological fruits and vegetables in super markets is approximately 15% (year 2007) while in 2002 it was less than 5%. The increase of organic production in the future will lead to rationalisation of prices.

Last but not least, there is still a lack of communication about the advantages of these goods to customers. Many of them are not yet convinced about the added value they get.

In Greece we still have a small percentage of organic agriculture (around 3%) compared to the other European countries. The financial crisis during the last two years has also affected this area but the effect is not clear. Gradually more retailers begin to sell these products and the range of products is increasing too. It seems that this keeps the total biological sales stable even during the crisis.

The biological fields in Greece have expanded 10.1% between 2005 and 2008 but the average European rate for the same period is 21% (Source: Eurostat, 2009). The total land cultivated with organic products in the European Union of twenty seven member countries was 7.8 million hectares in 2008. This was an increase of 7% compared to the previous year and 21% compared to the year 2005. Greece is 9th in terms of cultivated biological land in the European Union. Whatever is cultivated with organic methods, the rangelands and also the transitional stage lands belong to the cultivated biological farms. The transitional stage is a three-year period during which conventionally farmed land has to be cultivated with organic methods in order to receive biological certification. According to legislation these three years are considered necessary for the land to be rid of chemicals and become totally organic.

The champion countries in organic agriculture are Spain, Italy, Germany and Britain. However, the fastest rates of such an evolution occur in Poland, Lithuania, Spain and Belgium.

All the above make clear that the perspectives for Greek biological agriculture are marvellous. Greek farmers have not yet been convinced about the benefits of such an implementation. In the analysis of questionnaires above we noticed that Greek farmers in general do not have a positive attitude to organic farming. In hypothesis 8 we discovered that their refusal to implement this method is irrelevant to their age, their income and their education. This is very disappointing because it justifies why things move so slowly. Even the younger generations which should have more arguments in favour of innovations do not follow modern trends. That's why the percentage of Greek cultivated organic land is still very low, almost half than the equivalent of the rest of Europe.

The majority of agronomists with private stores also have the responsibility to force farmers into biological agriculture. Unfortunately, they are mostly scared of losing their sales of chemical pesticides and fertilisers. They believe that their turnover will be reduced dramatically if their clients turn from conventional to organic agriculture. However, they have to comprehend that this is a big mistake. If they do not follow the

market trends, then they will be totally isolated by global developments. In fact, this is a new market that they have to enter as soon as possible and obtain their own competitive advantage versus other countries. The figures show clearly that a large volume of biological production is still imported by other countries. There's no logical explanation about this, especially in Greece which is the ideal country in terms of climate and soil. The price gap between biological and conventional fruits and vegetables is also a strong indicator about the future survival of farmers. This market is now under development, so anybody who enters it will gain important profits. Gradually the price gap is expected to decrease but this is still very far from the current situation for two basic reasons. The first is the domestic market capacity and the second reason is the foreign markets capacity.

In the domestic market, the current demand is much higher than the production, although these products are not yet relevant to the majority of distribution channels. The more the biological prices decrease, the more customers they will attract. In discount super markets, for instance, they entered their range just two years ago and their sales participation is still increasing. In these super markets the target group of customers is basically lower-income. Even so, they accept paying some extra money for their food safety and quality. So the myth that biological food is proposed for only a few minorities of higher income customers is not applicable any more. These clients, during in-store marketing research, claim that they prefer these products for their children instead of the others. They are worried about all the nutritional scandals that are occasionally presented by the media and they do not take the risk of uncertified fresh goods. Apart from that, the range of biological products is also increasing in all retailers. A few years ago customers could only select among a few species. Now in some hyper markets they have the ability to select organic products for all fresh fruits and vegetables. However, even today the potential to increase the range is still very high, so the perspectives for domestic organic trade are very optimistic.

Regarding exports of Greek biological products, we have to seriously consider the cases on new members entering the European Union. The discussion refers to Balkan countries like Bulgaria and Romania, as well as Hungary and Poland. These countries have two basic advantages: first they are close to Greece so the transport cost is really low and, second, they have a gradual improvement of income which allows citizens to spend more for quality food. This is also a challenge that Greece has to take into consideration. We cannot lose any more chances because any further delay will clearly displace Greece from global markets. Especially nowadays, that the European subsidies for Greek agriculture will stop after 2013, farmers have

to cope with this reality and take advantage of any market opportunities (Source: Output from the interviews with Greek exporters). In chapter 6 we describe in more detail these challenges for Greek fresh products to foreign markets.

The analysis of questionnaires shows that only a small percentage of interviewed farmers has a positive attitude towards biological agriculture. In hypothesis 14 we found out that farmers who generally invest in their crops and in innovation do believe in the future of organic farming and want to expand it. In their typical profile these cultivators are more business oriented. They have better knowledge of the market and they try to become inspired by any changes in this. At the back of their mind, there's always some agronomist consultant who is coming from the private market. These mentalities together can result in many obstacles. What we need to keep from this analysis is just that such cases have to become more frequent. As always in the market there are some innovators who are followed by early adopters and these by late adopters. In the current situation we can conclude that biological farmers and their consultants belong to the innovators of their sector. These people are unfortunately the minority and the objective is to push more people into becoming early adopters in reasonable time. A final point for future research is whether these brilliant people will multiply in the future or if in the end the majority of cultivated land will pass to such businessmen. The latter seems more logical because it refers to professional agriculture with economies of scale. However, at the individual level there are still things to improve and make profitable even for owners of small land areas.

### 5.5.3 The perspectives of imported fruits and vegetables within Greece

The current section refers to the future of imported fruits and vegetables in Greece. It seems to be in contradiction with the reports in section 5.5.1 which support future suggestions for Greek agriculture. However, this contradiction is only a theoretical approach since both productions can be simultaneously active in Greek market. In agriculture some parameters cannot be 100% under control. This is the case for the weather, which expands or reduces the local production from year to year. Therefore the country's needs for imported fresh fruits and vegetables (in our case for imported potatoes and tomatoes) may be different from one year to the other: in cases of ideal local weather these may be minimized, whereas the opposite happens in bad weather. But there will always be demand to cover the domestic market with imported products. From the analysis in Section 5.2 we reach the conclusions below:

- Egyptian potatoes are about 12% cheaper than Greek ones in DDP prices. This may apply to the winter period when there's no local production. However, the creation of modern chambers to storehouse the Greek material may allow the parallel presentation of both origins. Customers will be given the option of selecting between Greek and imported product. In such a case the local production can be sold at higher prices and the imported Egyptian product can accompany the first as a cheaper alternative. Such a higher price for Greek products can be justified only by quality certification. It is necessary to create the clear difference in the customers' perceptions. The expansion of shelf life through storehouse chambers may offer better profit margin to farmers and traders of Greek production. The Egyptian products can be supplied complementary to cover total lack of domestic product.
- French potatoes end up being approximately 4% cheaper than Greek potatoes. They may be used in a way similar to Egyptian potatoes but they have an extra advantage. They are produced in Europe, which is preferred in the analysis of farmers' questionnaires (they perceive their quality to be equivalent to the Greek product). In both cases of Egyptian and French potatoes the cost comparison with Greece was based on contracted Greek agriculture. This gives an extra discount of 0.10 Euros per kilo in field price (from 0.24 per kilo to 0.14). The most expensive costs concern non-professionals who work on a less organised level in terms of purchases and scientific advice. The outcome is that contracted agriculture in Greek potato crops has to be expanded and turn more farmers to professionals. This methodology in combination with quality certification can broaden the market share of local production in the domestic market versus French and Egyptian potatoes. However, both of these have to be applicable to the Greek market as season and price alternative choices (either cheaper than Greek certified potatoes if that's applicable to the market, or unique alternatives in case there's no other production).
- Cyprus potatoes remain a constant powerful brand name for the Greek fruit market. Although they are 32% more expensive (DDP to Athens central fruit market), they still have more potential for growth. For the time being, it is the best selling potato product. In terms of marketing this species needs improvement in distribution and promotion. Once it penetrates more distributional channels, it will become further available to the public. Internal market research in super markets certifies that consumers trust its freshness

and taste. In future research, Greek agricultural institutes and seeding companies should seriously consider the development of such local varieties.

- In tomatoes, Greece proves to be cheaper than Turkey and Poland (Source: Section 5.2). FYROM is cheaper than Greece (0.28 per kilo versus 0.36) but this comparison is not so reliable in quality terms. The FYROM quality certification is almost nonexistent and besides the legislation of the country allows the use of forbidden chemicals. The country is still outside the European Union so the legislation is quite ambiguous. For these reasons, the existence of FYROM products in the Greek market cannot threaten the local tomatoes since they basically target specific groups of customers who care less about quality standards. For these groups, there's also the alternative choice of outdoor Greek tomatoes which are even cheaper (0.12 field price per kilo compared to 0.18 glasshouse cost price). Even so, the product's gap in the market is always a constant threat for two basic reasons: the weather and plant diseases. The weather can cause serious losses to local production in both winter (very low temperatures) and summer (heat waves). Plant diseases also affect the crops, mainly in the summer period. These are some untreated viruses that break out from July to October and reduce or even eliminate production. The imported tomatoes can replace Greek crops under all circumstances mentioned above. FYROM and Turkey can supply the Greek market with sufficient quantities during these periods of shortage. In future the development of new covering and warming technologies for glasshouses in Greece is expected to decrease the need to import but never to abolish it.
- Polish tomatoes are the most expensive ones to de delivered to Greece. They are 22% more expensive according to Section 5.2. Theoretically the FYROM and Turkish products should gain bigger market shares inside Greece. However, from the analysis of Greek farmers' questionnaires (Unit 5.1.1) we conclude that Greek farmers do not trust the quality of non-European countries, regardless of their age and education. On the contrary, they trust European quality more as customers. The final conclusion from this point is that a product of Greek origin which is also certified in quality has much potential in gaining the customers' interest. If Greek farmers support their crops with modern knowledge and quality certificates, then they will benefit from better future incomes.

- Last but not least we should examine the case of imported tomatoes from Belgium and Holland. They are both far more expensive compared to Greek potatoes and for this reason their case is similar to Polish production. They enter the market only in gaps of domestic production. Their price (DDP to Athens central fruit market) is around 0.60 euros per kilo which is far higher than for Greek (0.36), FYROM (0.27) and Turkish (0.37) products. It's quite strange though that these products are cheaper than the Polish, although the latter are transferred for shorter distances. This is due to two reasons: first, the means of transport from Poland are fewer and the fees are proportionately higher. Second, the glasshouses in Holland and Belgium are better organized. These countries have used this technology longer as they are older members of the European Union and they have taken advantage of European subsidies for longer periods of time. The result is higher output and lower costs per hectare. Finally, the future of Dutch and Belgian exports to Greece is similar to the Polish exports. All these three origins will continue to be imported when Greek tomatoes are completely absent.

### 5.5.4. The perspectives for other markets outside Greece

In this paragraph we comment on the chances of Greek products being exported and the chances of other countries exploiting business opportunities among them. First, we have to clarify that our recommendations are based on reasonable weather conditions that do not change the whole picture. Otherwise, sudden product shortages can lead to rapid increases in exports, but this is not the rule. The costs per product and per country, as shown in Section 5.2, lead to the conclusion that Greek tomatoes can be exported to countries like Poland. Furthermore, Greek potatoes can be exported to countries like France and Spain. Speaking on a cost basis, Greece can theoretically export to countries like Turkey and Cyprus (both tomatoes and potatoes), but these countries have their own peculiarities. They both have similar climate conditions to Greece, which means that production in both countries takes place for almost the same period. The local market in Turkey is focused on minimum quality standards, although the local exporters have invested a lot. Such a market asks for lower quality products which are outside the scope of this research project. Our field is the European Union fruit legislation and market trade because we do believe in the future of these evolutions. The history during the last three decades has proved that conventional non-certified agriculture is stably minimized and the future belongs to food safety and quality. Therefore the issue of

regular exports to Turkey, for the time being, has to be re-evaluated with more research on Greek agriculture. Such research has to be based on second quality products which are currently rejected by European markets and so can become even cheaper for the Turkish public. This is also commented in Section 6.3.3 below.

Cyprus, on the other hand, has invested a lot in agriculture and the packing–export patterns of the country are often enviable. The branded Cyprus potato is produced twice per year which normally is enough to cover most of the local market needs. In case of shortage they first ask for Greek alternatives but these have to satisfy the quality standards of the local consumers. The major complaint is the short shelf life of Greek exported potatoes but this has to do with inefficient field and laboratory control up to harvest. Some quantities come already damaged by plant diseases from the field and this appears a few days later, especially when the product is taken out of the fridge. Cyprus customers seem to be origin-oriented, especially to Greek products, but they also need to gain quality satisfaction. Greek production free of diseases with minimum shelf life similar to Cyprus can be presented to the Cyprus market not only in cases of shortage of domestic potatoes but also simultaneously with them. The turn from conventional to certified Greek production is again a one-way decision. Greece has to follow the example of better developed economies (like Cyprus and northern European countries (as stated in chapter 6). These citizens live on better incomes and they have the ability to pay more for extra quality. So these countries usually set stricter standards for quality.

The perspectives of export to Poland seem to be auspicious for both products. The Polish market of fresh fruits and vegetables depends on the weather and the protracted instability that occurs for long periods of time in several regions of the country. Below are the most considerable notifications which are linked to the market of fresh fruits and vegetables:

- The nutritional habits of the Polish people gradually change. The improvement in standard of living and the larger income in large parts of the population are the motivation to new balanced nourishment. This leads to the decrease of meat consumption (especially red meat) and the increase of fresh fruits and vegetables. Based on official statistical data and specific scientific' analyses, Polish people annually consume twenty kilos of fresh fruits less than the average international consumption. The same number is also true for fresh vegetable consumption. Compared to other country members of the European Union, these percentages are even lower. The dominant tendency is the gradual increase of this consumption, especially after the adoption of more patterns of consumption from the European Union.

- In the case of Poland, the nutritional habits gradually become similar to the other country members of the European Union. These are led by a more balanced and healthy nutrition which is normally based on increased consumption of fresh fruits and vegetables. It is also associated with decreased consumption of fresh meat and other foods because they contain high percentages of fatty ingredients.
- Another factor contributing to the increase of the food market in Poland is the biological sector. The interest of Polish people for these products is steadily increasing and has much potential to improve. If we consider also the average figures for the European Union and the fact that Poland is a new member, then we arrive at the conclusion that in the next three years the consumption of biological fruits and vegetables in the country will increase by at least 200% (Source: Output from the interview with Mr. Theodoros Ksipolias, Consultant in the Greek Embassy in Poland).

Another possible export activity is the shipment of potatoes from Greece to France and Spain. In Sections 5.1.1, 5.1.2 and 5.1.3 we concluded that the field costs for potato in these countries is similar. It is actually 0.10 per kilo for both France and Spain, while in Greece it is 0.14 (in contracted agriculture). This seems to create another opportunity for Greece to export to the above countries during product shortages. For the time being, there are a few exports that take place occasionally between April and May. They may reach till the middle of June. This is a dead period for both importing countries due to their climate while in Greece it's already the beginning of fresh summer production. In southern Spain, the climate is similar to Greece and the production per year also has two cycles. On the contrary, in France production takes place from July to October (one cycle per year). Theoretically, the gap in the French market of fresh potato should be for longer periods. However, improvement in storehouse chambers allows a good shelf life for the product of up to six to seven months (usually till May). For these reasons, the country's needs to import are lower than expected and the basic trade between France and Greece in potato is done during the periods of poor French quality.

Another quality parameter that creates beneficial opportunities for Greece is the attitude of French and Spanish customers toward size B potatoes. In Greek market the price of potato is related to quality and size. For the same quality of product, the longer potato (length more than 50mm per item) is considered to be size A, while the smaller remaining potatoes (length between 35-50mm) are classified to the cheaper size B. The difference in full price is up to 50% between sizes A and B (B is the cheapest). On the other hand, in the French and Spanish market the customers have completely opposite opinions about sizes and this is due to the different nutritional

habits. Size B is the most expensive because it appeals to specific groups of customers who use it in specific meals. Therefore the possibility to expand exports of Greek potatoes (size B) to these countries may be established for the whole year. This can be an ideal opportunity to take advantage of both markets simultaneously. The domestic market in Greece can absorb size A at higher prices, while the foreign market may pay more for the size B, which in any case has small potential in Greece. For the farmer, size B potatoes might account for half of the total volume of the harvest. This depends on the weather, the seeds etc. As a result, these large volumes can ensure a satisfactory income when exported to countries like France and Spain. It is not just an additional source of income; it can offer farmers and traders even better profit than normal size A potatoes. After all, size B is barely sold in the domestic market. They are mostly sold at ridiculous prices by the farmers or occasionally even thrown out in the fields. The problem is that many traders suffer from commercial “ankylosis” and they appear “stuck” in the domestic market, with the same problems. A typical mistake usually made by them is that they feel fear for the foreign markets because they think that the problems of the domestic Greek market will be even worse abroad. But the challenge per country is based on the differences of culture, legislation and nutrition patterns and this is what traders have to turn to their own competitive advantage. Many times Greek farmers throw away huge quantities of size B potatoes because they have no alternative inside their country while the same product may be sold more expensively in some other countries than size A potatoes in Greece. That’s why they have to develop “market extroversion” and work additionally to the domestic trade.

As shown in chapter 6, future researchers may become involved in the investigation of synergies among European countries themselves. In our project the analysis included Greece, France, Spain, Cyprus, Poland, Turkey, Egypt and FYROM. From the cost price tables in Section 5.2, we conclude also that FYROM should seriously consider exporting to other European countries, just like Greece. The costs of conventional agriculture in tomato are very low, so probably an additional cost for certification of the production could be easily added to the final price and not affect the country’s competitive advantage of price. FYROM farmers and traders have to adapt to new European legislation about food safety and to make their exit to the foreign markets. Cyprus also has gained a powerful brand name about its product which is probably the most difficult bet to win. Once you have product awareness then you can build on this image and expand your customers’ base. Exclusive technical problems inside this country make it quite impossible to expand to new crops. The drought that afflicts the island for the last five years has created massive

problems in agriculture. Farmers pay extreme amounts for crop watering and in future they have to turn to new crops that demand less water. Furthermore, land prices are still expensive because foreign investors prefer to use it for hotel businesses. These are the two basic reasons that younger generations of Cypriots refuse to keep working in agriculture. However, the potato product has already built its acceptation by customers worldwide and it has further possibilities to gain more market share in foreign countries.
Last but not least, the Scandinavian countries are another alternative research destination, as shown in chapter 6.

### 5.6 Analysis of findings on practice

In this section, we approach the whole Greek agriculture and trade from the aspect of competitiveness. Although, our research is focused on potatoes and tomatoes, it appears that most of the conclusions are applicable to many other products of agriculture. The structural problems of these two basic products are almost the same with agriculture in general; therefore the recommended solutions can be applied to a broader range of crops. The suggested solutions refer to two different targets for increased competitiveness. The first is reduction of cost and the second is approaching new markets with less competition and so higher prices.
As shown by the first questions in farmers' questionnaires, there's a big gap in field costs of potato. In northern Greece the producers have a field cost of about 0.14 Euros per kilo while in the rest of the country it is 0.24 per kilo. The strangest thing however is that the climate in the rest of Greece allows two productive cycles per year. In other words, farmers there should be more professional but unfortunately this does not happen. On the contrary, in the north of the country, where the climate allows only one productive cycle, all producers have researched the cost details and they seem to have reduced it to around 0.10 Euros per kilo less than the rest of the Greek producers. At first sight what should be done is transfer know-how from northern to southern Greece potato farmers. The first thing to do is to gather in unions under the supervision of specialised traders-exporters. They work on a contractual basis with the traders so they know in advance how many hectares they have to grow each season, what varieties to prefer and what final price they will get. The contractual price has to be beneficial for the traders so they have to drop their costs. For this reason they have hired their own agronomists to support their farmers with scientific (and not only commercial) advice. They search for agricultural

equipment; sometimes they make direct imports to reduce intermediaries or special agreements with local equipment stores for massive purchases from farmers' unions. In this globalised market it's impossible for the farmers to keep on negotiating their costs on an individual basis. Costs are always related to the final yield of the product. Technical advice is also important for the selection of appropriate varieties that can provide maximum yield. In current figures, the average production in potatoes is 40 tons per hectare in southern Greece and increases to 65 in the north. This is 62.5% higher production which automatically means lower cost per kilo. A big part of Greek farmers remain non-professionals and work in the old fashioned way which is isolated from global changes and competition. Even worse, the average age is too old so it's more difficult for such people to adopt changes. They gradually retire and even if the younger generations are not generally involved in agriculture, the situation slowly improves. The total number of cultivators has decreased but not the cultivated land. This means that gradually larger farms pass to fewer farmers so they become more professional in order to survive (Source: Output from the interviews with Greek cooperative unions and traders).

In the case of the tomato, there are two big issues again for further research. First is the big difference in cost between the glasshouse and outdoor crops. The second issue is the increase of glasshouse crop yield which seems to have many points for improvement. The field cost varies from 0.12 Euros per kilo outside the glasshouse to 0.18 Euros per kilo inside it. As far as the average output per hectare, it is around 70 tons for outdoor crops and 120-160 tons for glasshouse crops. In other countries like Poland, it is around 200-250 tons so there are still many improvements to be done in Greek agriculture. These will reduce even more the costs of glasshouse crops so the ability to export will be enhanced. For instance, an increase from 160 to 200 tons per hectare, i.e. a difference of 25%, means an equivalent drop in the final cost. The cultivation methods from country to country have many differences and this know-how has to be transferred here in Greece. In Poland, growers "train" tomato plants in a way that they expand the collection period for almost one month compared to Greece. They utilise as much as possible the area inside the glasshouse and they share knowledge with the trading companies for mutual benefit (Output from the analysis in SPSS, in section 5.1.1).

As shown in Section 5.2, Greek tomatoes in the end are much cheaper than Turkish and Polish tomatoes. Also, if farmers gather their purchases in unions (like potato growers), they can increase their competitive advantage. Specifically, in the main productive area for winter, which is the island of Crete, such decisions should be taken by the cooperative unions' managers. Keep in mind that this island is the

exclusive tomato production area for the whole of Greece from October to April, so there's a lot to be done with regard to increases in sales. Changes have to be done both in marketing directions and in the internal structure of their collective bodies. In more detail, the suggested changes from the summary of the results of this study are:

1. Creation of an independent organisation for fresh fruits and vegetables which shall intercede for any difficulty between producers and traders. This will have to perform market research and product promotion. This promo may refer to new products, to new markets or to both. Such an organization has to keep historical data regarding domestic and global markets.
2. Creation of an independent organization to support the brand name for each geographical area to the markets. The target should be to provide an identity for all high quality products, which will be linked to an acceptable brand. This will be the products' "passport" for the market. These quality marks have to be protected by specific legislation. Of course, all these proposals require further expenses that have to be added to the final price of the product. However, some governmental motivation and subsidisation for such expenses is considered necessary for the first steps at least. Once the brand awareness becomes strong, the increase in sales and price will cover these expenses.
3. The marketing research in Greece is still focused on increasing production. It now has to turn to quality and trading methods for the products. The necessity for specialised vegetable departments leads to the following new structures for such an organisation:
    a. Production department that will be in charge of plant protection, fertilizers, cultivation methods.
    b. Quality department that will deal with studies and analysis of residue levels, after harvest treatment, taste, quality evaluation of varieties according to the market demands.
    c. Financial analysis department which will examine the production costs, investments and amortization, market studies, trade perspectives and financial indexes.

    Such an organization has to be financially independent from governmental sources, for its long term survival. It has to be financed by the members' subscription, who will benefit in turn from the research findings. This can be arranged by some sort of tax on the product price. Part of this amount can be associated with the farmers' insurance agent.

4. Regarding auction halls, the future target has to be the increase of sales through direct supply of super markets and reinforcement of contracted agriculture. New workers have to be well educated and their target will be to change cooperative unions to quality-certified packing unions. The transparency of auctions can be achieved by electronic tables of price offers and registrations. Although the daily auction is a commodity for Greek markets, the auction has to seriously consider exporters and super markets. All these need stable weekly prices and such a success will be of mutual benefit to all parties involved. Cooperative unions have to believe in the future of contracted agriculture because this is the only way to keep stable prices on the farmers' side and thus offer stable prices to export customers. Naturally, the appropriate software is critical for the follow up.
5. In terms of quality certification, efforts have to be made in many different aspects like collection, separation, packaging, storehousing and transportation. The universal implementation of MRLs from all European countries has to succeed, according to the European legislation. The frequency of quality controls on chemical levels has to be increased for imported products. If they exceed the MRLs, then heavy penalties should be implemented. The public needs more information about the dangers of chemical pesticides because the mass media usually terrorise them. Similar increases in inspection have to take place with regard to origin mislabelling that often occurs in the market. Foreign products are presented as Greek and obtain higher prices. The ministerial certification authority has to simplify the whole procedure and issue a list of authorised certification companies. In this market there are too many small companies that pretend to offer standard quality certificates but very often no one in the foreign market knows them. Therefore, the national standards have to be matched to European standards like Eurepgap which is universally acceptable. This lack of information in terms of certified products has to stop since it creates confusion to consumers, producers, supply chains and mass media.
6. The cooperative unions have to focus on the manipulation and trade of their products. They have to retrain their staff and also hire young specialised managers with modern mentality and initiative to act. The modern farmers' unions have to be connected to the contracted agriculture. Such an evolution may help to overcome the structural problems of Greek agriculture. Once they gather sufficient quantities of products and therefore exceed the small average land per farmer, these producers can approach the foreign markets

on fair terms. These unions can transfer the information to their members faster than individuals; they can also reduce their costs and establish a new quality control system which will change the farmers' mentality very much. These unions have the ability to absorb the European subsidies more easily and advance investments in agriculture. This is how they should prepare to face global competition more effectively. They should be responsible for multiplying their members and developing contracted farming. The more members they make the more quantities can be gathered. Discipline among all members is easier if they all belong to the same union, because they know that each one will be criticised by the rest in case of violation and so they agree to the contracts' terms.

7. Future agriculture requires young farmers who treat it professionally and not just to continue their parents' tradition. Naturally, people are selected mainly by social factors but if we provide the governmental frame to support these people, more and more professionals will become voluntarily involved. These people need to know that there will be available professional information and support whenever they ask for it. This is an area where the state must intervene. The agronomist's future role necessarily goes through his reward from the farmers. He has to gain the consultant's role only through constant education. In addition, his professional assurance is another responsibility of the state. That's why the publicly employed agronomists must be active in daily presentation to the fields. They must not deal with irrelevant jobs in their public position.

   Private agronomists need another legal fortification to become devoted to their science. Nowadays their only income comes from equipment sales. They are focused on these targets and many times this is opposed to the customers' health and to environmental protection. First, agricultural pesticide recipes must be given only by relevant scientists. Till now, this is even allowed to some dealers who "cannibalise" the area. As a scientific advisor, the agronomist has to receive payment for his services. So he has the motive to be more scientifically rather than commercially oriented. Furthermore, the liberation of agricultural engineers from the equipment trade (which is in repletion), can supply the new consultant companies with experienced managers.
8. This change from quantitative to qualitative production also has to face the workers' unions differences and political beliefs. All these parties must work

on the same basis: “profits for the individual will come from profits from the union”. This is a win-win basis and it cannot be achieved so easily. It needs:

- Farmers with business consciousness
- Agronomists aware of modern circumstances
- Open-minded traders and cooperative unions with innovative thought
- Union representatives who will not just shout at their political opponents, but will also assert objectively their rights and suggest long-term solutions
- Politicians who will see farmers as businessmen and not just voters
- A state capable of rewarding experts and not political friends

9. The nutrition sector still needs to be founded on quality and not quantity. All European and national subsidies must be connected to the European rules of health and protection. This is the only future added value to the agricultural production. Maybe the bank loans to new businessmen should also be subsidised by the government to support these enterprises (Source: Output from the interviews with Greek cooperative unions and traders).

## 5.7 Proposal of alternative methods regarding the Greek agricultural production

In chapter 5, I have provided a detailed presentation of the results of the farmers’ questionnaires and the interviews with traders, the cooperative unions and the private agronomists. Circumstantially, the most important steps to improve competitiveness of Greek agricultural production are the following:

1. The combination of cheap purchases and higher performance in the field is expected to lower the production cost and lead the product to more approachable markets. Cheap purchases can be achieved through integration of agricultural supplies (fertilizers, seeds, pesticides) as a result of cooperative unions and farmers’ unions. Higher performance in the field depends on the implementation of new hybrids with more desirable characteristics to the recent market demands (output, taste, aspect and shelf life).
2. The training of the plants (case study of the tomato). In the glasshouse crops of tomato, farmers who train plants specifically have raised production from 200 tons to 400 tons per hectare. The productive period of the plants is increased by means of better plantation (more flowers remain on each plant and there is increased produce). Furthermore, the application of a hydroponic substratum leads to an increase in harvest due to the elimination of plant diseases and the perfect absorption of fertilizers. In same cases of hydroponic tomato crops, the production rose to 600 tons per hectare.
3. The external appearance and the packaging of the fresh products are also key factors to determine the purchasing decision of customers.

4. There are certain factors that can be controlled by farmers: crop planning, product compatibility and certification of production. The former two are related to the harvest while the latter affects the selling price. All of the above factors play a major role in the final income of farmers, since they are all inter-related. The timing of crop planning in combination with the most suitable product and the necessary certification (requested by the market) lead to the maximization of output and profit.

## 5.8 Correlation among methodology, findings and conclusions

The whole project is based on five sources of information. The questionnaires (quantitative research) have offered the information regarding the cost per product, the innovation, the farmers' attitude to imported products and their demographical characteristics. These were distributed to Greek farmers only.

The rest of the information is based on interviews (qualitative research) with the Greek cooperative unions, Greek traders, foreign wholesalers and embassies. The questions aimed at cooperative unions related to the cost base, the mentality of farmers, the R&D, the restructuring of traditional crops and the market strategy. The questions aimed at Greek traders and foreign wholesalers related to their marketing policy, the target groups of customers and the prevision methods of market changes. Finally, the embassies offered us general information about the Scandinavian countries plus China.

All findings in chapter 5 and the conclusions and recommendations in chapter 6 are related to the methodology. In more detail, findings in sections 5.1.1 (The case study in Greece) and 5.3 (Findings regarding Greek farmers) come from the questionnaires answered by Greek farmers. The data from section 5.1.2 to 5.1.8 (foreign countries) is based on the interviews with foreign wholesalers and Greek traders. The same interviews lead to the conclusions in sections 6.1.3 (promotion), 6.1.4 (place-distribution) and 6.2.4 (future research on exports for other countries). Lastly, the combination of interviews (with traders, wholesalers and cooperative unions) and questionnaires answered by Greek farmers led to the other findings regarding the Greek market in sections 5.2, 5.4, 5.5 and 5.6. Additionally, they brought about the conclusions in sections 6.1.1, 6.1.2, 6.2.1, 6.2.2 and 6.2.3 concerning the Greek production and market.

## CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Marketing mix for successful launching

In this Section we analyze the necessary steps that Greek products have to follow for successful entry into foreign markets (including European and other countries). Naturally, the same actions will reinforce their position in the local market. The awareness of foreign consumers for Greek products is a major topic. The demand for more agro consulting offices is clear. These are responsible for the extroversion and flexibility of Greek companies. The CEO of such an office (Oikonomotechniki Ltd), Mr. Pantelis Skarlatos claims that their mission is to supply promotional services to Greek export companies and prioritize the positioning of Greek products in the international market. Such an experience is vital not only for the European Union but also for the other countries like Russia, the Emirates, Ukraine, China and Norway.

The planning of these programs includes a mix of marketing activities. These are adapted to the product, the market circumstances and the competition so that all prerequisites for the successful launching in a new country are satisfied. Such promotion planning can include direct and indirect activities like advertisement, public relations etc. There are always some conditions to improve in such planning according to the target country. These have to do with the local nutritional culture as well as the standards of price and quality. The main message that Greek agriculture has to express worldwide is that the price of a Greek product is related to its quality, particularly in new developing markets like Russia and China. Unfortunately, foreign consumers do not have the appropriate information about Greek products and this topic should concern everybody involved, from farmers and traders to the relevant governmental authorities. Certified Greek fresh fruits and vegetables (integrated crop management and organic crops) have much more potential to improve sales. What is missing is comprehensive planning of promotion to the target countries. This is what some other countries have already succeeded in. They have promoted their products as “national products”. Strategies of products’ priorities and strategies per target country are imperative for a successful extroversion.

Regarding the domestic market, all the work remains to be done on the comparison of Greek and imported vegetables (potatoes and tomatoes). Typical questions to be answered are: when they enter the Greek market, what price they have, what quality standards they have, what margin do the traders make. Each of the questions above has been analyzed in detail within the previous sections. The conclusion is that imported vegetables enter Greece whenever the Greek production is inadequate or

non-existent. They are usually placed on a similar price policy to the Greek ones (when they are still available). If not, they are placed at considerably higher prices as all intermediate traders take advantage of the market gap. If we look at the comparative tables in Section 5.2 and we remove the non-European countries (FYROM for tomato and Egypt for potato), which have more flexible legislation regarding chemicals, then we conclude that the cost of European products are similar to the Greek ones. Therefore, the marginal motivation for traders is the same in both cases. They probably have the ability to make more profit when Greek production is totally eliminated. This is the issue for some cartels which control the pricing policy for specific imported products in the country.

On the other hand, the quality standards for the whole European Union are the same so there's no objection that Greek vegetables are fairly comparable to the other European products. The expansion of Greek products' availability in the domestic market together with better awareness by the customers can guarantee a better future income to Greek cultivators. Besides, as shown before, Greek traders have to increase their extroversion. National production does not need to envy foreign imports.

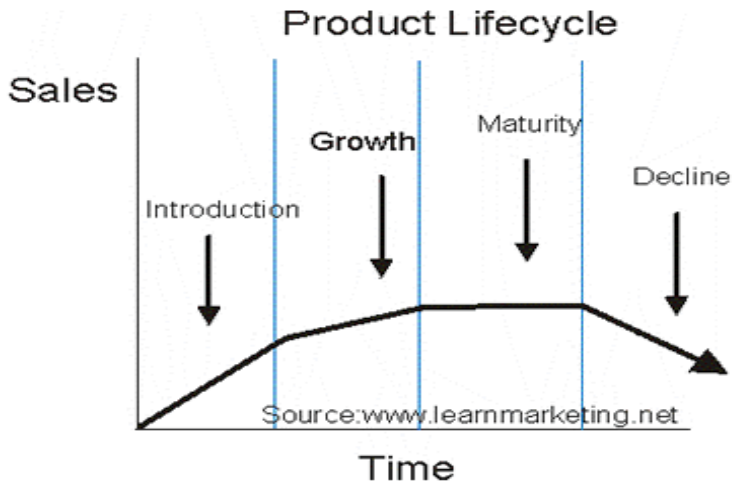
To summarize, we could mention that the four principles of marketing (4P's) for potatoes and tomatoes in the agricultural sector are more or less similar, regardless of whether we discuss the domestic or external market. Specifically, agricultural marketers have to work hard on the areas mentioned below:

### 6.1.1 Product

- Conventional agriculture has to be reduced and farmers should gradually turn to certified crops. This is the case with integrated crop management which allows the usage of chemicals but under specific rules so that the final production won't be aggravated by chemical residue dangerous for human health. Such a turn creates a very powerful argument for Greek agricultural production towards the domestic and external market. A price comparison between certified and non-certified production cannot be made because they are actually different products. In our study, certified Greek tomatoes and potatoes cannot be fairly compared to the FYROM and Egyptian products. In some cases even Turkish products proposed for their domestic market have no European quality standards. Therefore the change to certified goods will set another place of price competition in the Greek and foreign markets, with fewer products comparable among them.
- A retail market research must necessarily be done on a constant basis. Such a study should focus on the current and future needs of clients. These needs

should be taken into consideration by the seeding companies and national institutions for innovation on new varieties. All products have their own life cycle. After they are introduced into the market, they present growth. The next phase is the maturity level and finally they pass on to decline. This is shown on the diagram below:

**Graph 6.1**

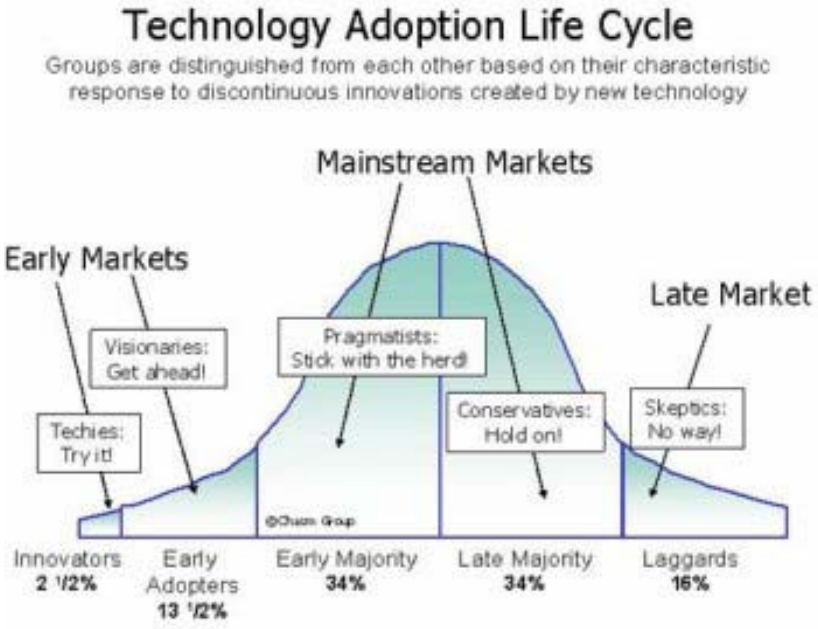



Seeding companies' marketers should follow the above trend for every variety used. Whenever products are about to pass from maturity to decline, it's the appropriate time for researchers to push new varieties into the market and start the life cycle from the beginning. These varieties should be adapted to the findings of customer research.

- Innovation is the next characteristic that proves necessary from our study. It seems that during the last decades both farmers and seeding companies have focused on specific traditions and ignore the market's needs. For instance, over the previous years the companies set the maximisation of output in their varieties as their target and thought that this was the best method to increase farmers' profitability. Their argument was clear: increase productivity to decrease cost per kilo. Farmers, on the other hand, always comply with the directions of their agronomists. As a result, the market has suffered an overabundance of similar products without any differentiation at all. In many cases, huge quantities of such products have rotted in the fields because they never managed to reach a sufficient number of customers. Innovation has to be linked with the market research mentioned on the previous paragraph. New varieties better express the customers' purchasing behaviour. Tomatoes on the branch are famous for their better shelf life and gradually customers seem to prefer

them to the common product. Although they pay a little more, they are convinced in advance that at the end they will throw away less product, so their real profit is higher. Future market research should also examine the preference for new habits like mauve or green tomatoes (variety Raf) etc. Potatoes which can be easily cleaned may also appear promising in the market. Generally, innovation has to involve the current and upcoming tendencies so that new varieties will receive market awareness. Marketing history has shown that the first innovators in each sector are the ones to gain the highest market shares. These are the key players who obtain customer loyalty and this course can hardly change. Especially in traditional markets like Greece, in which most customers belong to the "late majority" category. Only a small minority belongs to innovators and early adaptors who are more likely to follow new and modern trends. This is briefly exposed on the diagram below:

**Graph 6.2**




Source: ("the principles of marketing", Philip Kotler & Gary Armstrong, 13th edition, 2009)

- The differentiation of varieties in the market can also be achieved by the development of selected traditional varieties which are famous for specific organoleptic attributes. A stock of such seeds is permanently conserved by the national agricultural institutes which are located in the productive areas of the

countryside. All these varieties are historically adapted to the ground and climate circumstances of each area and therefore can be easily grown in these fields. Actually, these seeds have never disappeared but they were dramatically decreased once hybrids entered the agricultural business. The difference between hybrids and local varieties is that the first can be grown only once as seeds in order to guarantee their characteristics. If the farmer keeps seeds from the harvest to grow in the next period, then the new plants will have fewer characteristics than the first hybrid crop. Besides, hybrids always promised higher yields. However, now that the overproduction of hybrids has filled the market, the new trend is higher quality. Local varieties, on the other hand, do satisfy this customer need. That's why they never disappeared from the market, as said before, but they were only isolated on the shelves of certain fresh product stores. In addition, these local varieties are cost-reduction choices for the farmers since they can keep seeds and use them for ages without missing any desirable characteristics.

Last topic for the product issue is the development of biological agriculture. As shown in chapter 5 (Section 5.5.2), the big price gap between conventional and organic fresh fruits and vegetables in Greece is a clear indicator for the necessity to turn farmers on to this new trend. This gap is around 40-50% when both products are from Greece and it can exceed 100% when the organic product is imported. Besides, the average cultivated land in Greece is much smaller than in the European Union. These are the basic indicators that biological agriculture has much potential to expand in Greece and reinforce farmers' income. Even farmers with little land, which is still typical in Greece, can add more value to their business by changing to products with less competition. The more organic agriculture expands, the lower prices will become. Logically, know-how will be improved so the farmers' costs will be reduced too. In any case, biological production will never fully substitute conventional crops because there will always be a need for cheap food for the lower society levels, but it can approach more customers who improve their incomes and wish to have better living. The difference in cost between organic and conventional fruits is around 10-30%. This applies only to the first 2-3 years. Gradually, fertility is restored and the cost difference is reduced. Therefore, farmers have the chance to make better profit margins through the added value of selling price (Ref: Summary from the analysis in chapter 5).

### 6.1.2 Price

- Once Greek products obtain their own identity, comparison of prices will become easier. The greatest problem in agriculture is that most products still lack quality standardisation and it's not easy to compare them directly with other competitors. Price collection and comparison is considered necessary for both certified and biological goods. Market researchers have to analyse more often the quality standards of specific products in combination with their retail price. Taking also into consideration the profit of all intermediaries, they can estimate precisely the price at which the purchase should be done and also the field price of the product. In other words, an online database of fruit retail prices is essential for improving Greek competitiveness for the same product quality. Such information is useful not only for the Greek market but also for potential exports.
- Another way to avoid massive competition is the trading up of products. The improvement of the appearance of the final product in fresh fruits and vegetables could involve several parts, like packaging, calibration, spots, defects and generally anything related to quality. The market segmentation of one country provides useful information about the higher-income target groups of customers who wish to spend more for their nutrition. A company trading in fresh fruit has normally two alternative solutions to implement: First, it may enter the market as an innovator that will train consumers in higher quality and higher price. In marketing, this is called "entry of a new product to a new market". In such a case marketers have to estimate the expected period of time in which consumers will become a mature public and their sales will increase. Usually people with higher income and education become the innovators who first try these new products, as shown also in the analysis of farmers' questionnaires in our project. Second, if the public is already mature then the trader has to develop a much higher quality product than the one presented by the current leader. Obviously, the trader must be already successful in his business before expanding to further markets. Trading up in a mature market demands fully certified production which is already approved by customers. Marketers should bear in their mind that clients are well trained in selecting similar products. So the risk of rejection of bad quality brands can lead to their complete disappearance.
- Market segmentation again can provide more potential for trading down quality. In fresh fruit, this is second quality which appeals to lower incomes. Retailers

may foresee the future in private labels of fresh products which will be cheaper than the national brands. Another trading down is the first price products which are supposed to be the cheapest in their category. Private label and first price products are already available in all hypermarkets and they seem to gain considerable market shares. That's why even smaller retailers are starting to develop them too. At this point, we should clarify the difference between second quality and second size. The first refers to degrading products which have more spots, defects or colour deviations from normal. Second size refers to the same stable quality as for first size. The only difference is the size of the product. Exclusively for Greek market, both second size and second quality are perceived by customers as cheaper products while in northern European countries second quality does not apply at all. There are also some other exceptions, for instance potatoes. Second size in Greece is cheaper than first size while in France and Spain the opposite occurs. This is another chance for synergies among countries.

- Price differentiation may also occur for the same product in different market segmentations. Either in the same country or in different ones, the same product can appeal to separate target groups of customers with a separate pricing policy. Retailers call this phenomenon price tariffs and they depend on the local competition and incomes. One hypermarket can place a cheaper price for one product in a poor neighbourhood compared to the same retailer in a rich area. Traditionally in the case study of Greece, retail prices in countryside stores are higher than in the large cities due to lighter competition.
- Big packing companies of fresh fruits and vegetables can foresee the future in private labels. Once they have big volumes of products to deal with, the creation of a PL seems to add economies of scale to their business. They can sell additional quantities to the market and in this way avoid damages from products which would probably never reach any customer otherwise. The price policy of a private label is clearly cheaper than the national brand, therefore the quality may be somewhat secondary. These alternative packages are important nowadays for most big retailers who wish to develop the price image to their customers. Even the first price packages can be also useful as a complementary tool of benefit for trading companies and farmers. This is promoted as the cheapest product of the category, so the quality in this case may be second or even third size. At this point, we should clarify that the private labels and the first price products do not antagonise normal brands. They are perceived as different brands of cheaper price which appeal to other customer segments. Theoretically, all three of them offer alternative choices of price to the consumers and new market channels to

producers. This is how they should be estimated by marketers, as a win–win approach. The only argument promoting big packing companies for private labels is that they already have know-how of technical standards and specifications to fulfil the big retailers' demands. In quality terms they are probably asked to prepare something similar or less demanding than what they already sell as national brands. Since they already have their own production line, they achieve working expenses reduction by increasing the volume of production. Since the retailers have already trained their customers on private labels, it's up to them to determine the quality criteria for their package. Obviously there might be some difference among Private labels (PLs) of different retailers but in any case their quality parameters are close to the national brands. For the time being, the markets recognize the PLs as secondary price choices only. There has not yet been any trading up in the PLs. This could be probably a future research issue as the market share of PLs is constantly increasing. Trading up in PLs is the creation of a new product with better quality than the leader of national brands. The appropriate timing for such an innovation depends on the maturity of customer base, as shown in detail in Section 6.2.

- The biological products belong to a separate market segment, so their price policy should be examined on another basis. There are two alternative choices for this segment, as shown in our project:
    1. Prices of biological products focused on the creation of a competitive advantage towards the foreign imported production. There's a big price gap between conventional and organic products and this is mainly due to the importing of the vast majority of organics. Greek production is still absent because neither agronomists nor farmers have been convinced about the positive results. Actually, agronomists refuse this evolution in order to keep selling chemical fertilizers and pesticides. Farmers on the other hand appear worried about their harvest and continue to practice conventional agriculture. A change of this mentality is considered obligatory, especially nowadays since consumers have started to accept biological products. This is obvious from the increase of their market shares year by year. It's a new trend on the development phase which justifies that satisfactory margin can be achieved till the Greek market needs are covered by domestic production. In the current situation, organic agricultural goods are placed on a high-price policy which is 100% to 150% higher than conventional products. However, the production cost is not so high. It is usually more expensive than normal crops. This gap is gradually reduced as the field is liberated of chemical residues

and it can be reduced to 10%. There are some specific cases of individual organic cultivators who reach similar cost levels for biological and conventional fruit. This is achieved by businessmen who combine alternative channels to purchase their equipment and rational use of all sources to minimize costs. In addition, they may implement rotation of crops, so that the fertility of land is kept high. This can guarantee high yields too.

2. Premium price policy can also be implemented on premium quality biological fruits and vegetables. We should not forget that there's always a target group of customers who ignore the price and mostly care about the high quality standards on their purchasing decision.

Both cases 1 and 2 may be investigated complementarily. Different qualities from the same biological crop may be sold to different customers at a separate price. The possibility to exporting these products to high demand markets should be prioritised. Scandinavian countries, England, France and Germany are typical destinations with high interest. Their crowd is mature enough with regard to organics' benefits. In addition, export activity should be focused on Poland, Bulgaria and Russia. These countries appear to have great potential due to their volumes and improved living standards (Source: Summary from the analysis in chapter 5).

### 6.1.3 Promotion

The promotional tools should emphasize product demand. Two main choices should be followed: push and pull.

- **Push**

  Increases in product demand are achieved by wholesalers and retailers. In other words, detailed communication about all marketing characteristics (product, price, place, distribution) will clarify the competitive advantages. The messages that should be communicated to wholesalers are related to the superior characteristics. Whatever may catch a client's interest should be communicated. Product taste, a longer shelf life, better approach to current customer needs, cooking convenience and safety from dangerous chemical residues are some of the most attractive issues to the customers' perception. Last but not least is the participation in relevant exhibitions. Fruit Logistica in Berlin, World Food of Moscow and several annual events offer the opportunity to traders and producers worldwide to exchange information and make commercial contacts. Such events should be developed in all countries, with or without governmental

subsidisation since they are the link from production to consumption. According to the target market, companies should compare all benefits and opportunities to take part in such expositions that open new collaborations in the fruit trade.

- **Pull**

This is the increase of demand at the base. Marketing in this area has to work on communicating with the customers. Word of mouth is clearly the strongest advertising weapon to create pull demand. Satisfied customers spread the message in the most effective way. Anything that can build customer loyalty like nutritional value and food safety has to be included in this communication. In the case of potatoes and tomatoes, nutritional value has been occasionally evaluated by several medical researches. Especially studies based on preventative medicine analyse in detail the contribution of fresh fruit vitamins in the avoidance of diseases. The personal information, the newsletters, the advertising leaflets and the advertisements in mass media are important tools for both push and pull marketing. Internet is also of great importance with suitable links and banners to advertise messages to the crowd. All activities should take into consideration the customers' loyalty. The Ministry of Agricultural Development has begun a project on the treatment of childhood obesity. It has been supplying fruits and vegetables to the schools in order to teach students to follow a healthier diet than the current one. Greece has one of the highest rates of this disease and the target is to train young consumers in fresh products. Students are given free samples in order to become familiar with these nutritional models. The training of younger generations in schools can create the future base of clients who value fresh goods.

In the issue of exports, Greek embassies to the target countries can play an important role. They can act as link between the producer and the consumer (Source: Summary from the analysis in chapter 5).

### 6.1.4 Place-Distribution

In the matter of logistics we investigate the necessary steps to be taken from the farmers' point of view. The future target should be the unification of production in order to protect price negotiations. The massive problem in Greek agriculture is the individual sale of the product by each farmer. As said before, the majority of cooperative unions in Greece have not undertaken their full marketing responsibility.

Apart from the sales of equipment to farmers, they do not satisfy the need for safe markets. So farmers work as individuals who do not have the negotiation power of price and volume, as the cooperative unions should do. The analysis of all countries involved in our project leads to the following recommendations for successful distribution channels:

- In the case study of Cyprus we had a detailed interview with the general manager of Sedigep Ltd trading company. Mr. Koulis Fylactou claimed that the cooperative unions in the country are successful because they have allocated responsibilities to experienced staff. Farmers in each productive area belong to the same core. Many cores together create a cooperative union which has the responsibility for the entire management of cultivation. They start from crop planning and deal with the sale of the entire production. Cores of farmers vote every three years for their own representatives on the management team and they have to justify their results on a yearly basis. One of their basic duties is to search for the highest possible selling price. Once the production period has started, farmers receive only a deposit from the cooperative union to cover their harvest expenses. They deliver the whole volume to the union and the management team has to try its best to achieve sales. As soon as the whole volume is sold out, the union has to transfer payment to the farmers. All of them receive official information about the total annual results and turnover of the union. First, the management team has to deduct the labour costs of the enterprise. Then they take out 10% more money for future investments and the rest is distributed to the farmers according to their volume. Therefore, the higher the selling price that the union achieves, the better income the farmer will make. This is a fair trade system. In a nutshell, an effective distribution channel is the one below:

  Farmers ⟶ Cores ⟶ Cooperative Unions ⟶ Retailers

  This is the general management structure for fruit trading companies all over Cyprus. The elected representatives of the management team are in charge of the marketing plan and they are indirectly evaluated every three years by the farmers who vote for the new team. In this system farmers do not feel defenceless for having to negotiate alone the selling price of their production and other payment terms. The case study of Greece is very similar to the case of Cyprus in terms of climate, outputs and chances to export to foreign markets. Actually, Greece has two more advantages to exploit: First is the short distance from foreign destinations which saves transport costs. We

should bear in mind that Cyprus products are transferred by ferry to Greece and then are distributed to other European countries. Second, field cost price in Cyprus suffers from water shortage and this causes extra production costs. On the other hand, if Greece can be rid of bureaucracy in cooperative unions then they can expand their exports' market share.

- Another possible distribution channel is the one below:

  Farmers ⟶ Cores ⟶ Cooperative Unions ⟶ Individual wholesalers ⟶ Retailers

  An important issue with the two above commercial structures is that the farmers are not alone in bargaining their prices with each private merchant. The cooperative unions intercede in the channel and sell either to wholesalers or to retailers (super markets, convenience stores). This is a safety model to secure fluctuation of prices for both sellers and buyers. At this point, we should also emphasize the traders' risk in purchasing at unreasonably high prices. Although it occurs quite rarely, there's still a chance for some farmers to demand exorbitant prices for their production. For instance, in case of bad weather that has caused damage to the production, market demands are higher than supply. So the farmers who ask for very high prices may force prompt payers to search for alternative purchases. On a long term basis, such behaviour can damage commercial relations with specific geographical areas or even countries. The rumour of illogical pricing is the enemy of fair trade. Once this perception is established, then it will be too difficult to change it. Modern cooperative unions and traders have to work as a stability mechanism between the producers and the retailers. They have to train farmers on the benefits of contracted agriculture. This is necessary for the protection of prices, for the minimization of production costs and finally for the insurance of agricultural income. The cooperative unions should also absorb the risk of excessive lowering or overestimating prices and build on healthy and long term relations. They must examine the current market situation and adapt the whole marketing mix for the maximisation of long term profit.
- As far as exports are concerned, we suggest the direct cooperation of wholesalers (exporters and cooperative unions) with final retailers. All intermediaries should be ignored because they are responsible for market cartels. In more detail, they usually press the farmers' base for low prices in order to increase their profits so there are two basic problems. First, lower income to farmers and, second, extremely high price to retail market. Nowadays that the globalisation of markets has increased the competition

and availability of suppliers, careful pricing is critical for acquiring new markets and maintaining the existing ones.

- The liberation of public transport licenses in Greece will contribute to the appearance of big transport companies. They have flexibility regarding the geographical destinations and the ability to transfer small or large quantities at rational costs. These companies work with the “groupage” model which refers to the coordination of trucks in terms of loading and unloading areas. These companies have intermediate stations were products can change trucks to the final destination, in order to maintain economies of scale. The final effect of such a model is a drop in transport costs which still remains a problem in the domestic Greek market. Even small quantities can be transferred with competitive low costs (similar to that for large quantities or with a small surcharge). In the case of small companies which trade low volumes over long distances, it’s easy to understand that they keep their competitiveness versus larger companies in terms of transport.
- Cooperative farmers’ unions especially should seriously investigate the possibility of direct entry into the retail market. The creation of specialised retail stores in large cities, with certified and biological products, seems to be a logical investment to avoid the massive competition and control the retail market price policy. Farmers who belong to the cooperative unions can become stakeholders of such an investment. Therefore it can work as a vertical integration starting from production and ending to the final consumer from the same people. In practice, a retail store is the ideal solution for a market research. Purchasing behaviour, future tendencies, habits and needs of consumers can be studied accurately inside the stores. The conclusions are useful for the restructuring of future crops because they show which products should be cultivated in specific periods of high demand.
- All the information above can be communicated through websites. Registration of prices, qualities, packages and species may be provided internationally through the Internet and inform the potential customers. There are already several websites which act as newspapers. They mention the full prices that local trading companies ask for their products. The Greek companies should also be published in similar links with all relevant details about the price of fresh fruits and vegetables. The problem is that every possible buyer should have direct communication with the product seller he is interested in. Naturally, these links are not only useful for the buyers but also

for the packers and sellers. For instance, a Greek or Spanish potato trader can obtain online information about the competing companies and add improvements to the final product, to the logistics and generally to the whole marketing mix. These improvements will add competitive advantage to the trader again. However, the pitfall from such links is the reliability of online information. The risk of collaborating companies publishing fake prices is big. These companies can "play" with prices according to their competitors' actions, increasing or decreasing their price according to the equivalent prices of their competitors. Reliable websites, like e-fruitstock.com, select for partners only honest companies worldwide. Brand awareness, turnover, volume and banking reliability are considered basic criteria for this selection. Furthermore, these websites need some security valves like the limited number of price changes per day. The link owner also needs a reliability control system for all information. This is the credibility score per company which shows the internal level of competition among all companies involved. If the link owner notices any attempt to affect reliability or to exploit the website, they should remove these problematic members at once.

A similar online newsletter for transport costs should create synergies for both parts, at a more advanced level of sharing information. Each transporter, for example, can publish transport prices for specific volumes and destinations. At the same time, the interested trader is aware of all alternative transport costs through the online database. This is a win–win situation because the transporter can fill his whole truck and the trader achieves the optimum transport cost (economies of scales for both sides). Furthermore, transporters have a clear view of their competition and they get indications as to the points they should improve in future(Source: Summary from the analysis in chapter 5).

### 6.1.5 The effect of the current situation on the proposed marketing mix for Greek agriculture

Before we propose the efficient marketing mix for Greek agriculture, we have to analyse the current problems, as they arise out of the analysis of our qualitative and quantitative research. Price negotiations performed between Greek traders and farmers are mostly carried out on a daily basis. Super markets are the strongest retailers (around 70% of the market share), so any price pressure on their behalf has to be transferred to the producers. Many new packing houses have been established in the country during the last decade by the European bounties. Many of them have no market strategy and they cannot control appropriate orders or stock. Cooperative unions do not supply farmers with the necessary marketing services. They do not have modern mechanical equipment to cover current market needs like packaging

and calibration. Greece's competitors seem to have developed contracted agriculture between farmers and traders. In this way they work on the minimization of cost and the maximization of sales. The same phenomenon occurs in the north of Greece with potato growers who have reduced their production cost to 0,14 Euros per kilo compared to the rest of the country, where the cost increases up to 0,25 Euros per kilo. In Greece, unfortunately, only isolated private companies have established such partnerships with farmers. They sell the whole equipment to farmers with a small profit margin. They manage to trade their produce with more competitive prices than other individuals. The cooperative unions should also work on the contracted agriculture to reinforce the competitive advantage of their produce. The development of certification methods and the innovation in seeds will also contribute to the added value of goods.

Taking into consideration the peculiarities above, we conclude that the effective marketing mix should include low cost and high quality of agricultural production. For such an evolution, the following measures in marketing mix are considered necessary:

1. Product:
    a. New product varieties with innovative characteristics related to shelf life, aspect, taste and output should enter the market. They will involve the current and upcoming tendencies, so they will be met with market awareness.
    b. The selected traditional varieties (instead of hybrids) allow farmers to reuse seeds for an increased period (cost reduction) and they can lead to differentiation from massive competition. These varieties have specific and unique organoleptic attributes. Besides, producers save on the annual cost of buying hybrids.
    c. Certified production leads to different levels of competition and price comparison. Especially in organic products, the extra production cost varies between 10-30% while the extra selling price is 40-100% higher than that of compatible produce. In addition, organic fertilizers gradually improve the quality of soil, which in turn leads to harvest increase.

2. Price:
    a. Trading up in quality is important for new markets or mature ones. These markets do not face massive competition and products can achieve higher prices than normal markets. High demand markets, such as Scandinavian countries, may absorb products of premium quality. An increase in pricing is applicable also to modern hybrids (cluster tomatoes) which are noted for better shelf life and taste than the usual ones. These hybrids are impartial to massive competition.
    b. Trading down in fresh f&v (first price, private labels, size B) may contribute to additional income.

3. Promotion:

a. Emphasis should be placed on the communication to Greek consumers concerning the specific taste and other differences that occur in the traditional local varieties in each geographical area.
b. Further information about the benefits of certified production on human health is also considered essential. Certification leads to the minimization of chemical applications in crops, and this has two benefits, first to the production cost and second to the protection of health. Activities should prioritize the development of organic agriculture too. As shown in the figures of our analysis, Greece is an importer of organic fruits rather than a producer, therefore the market gap to expand to organic crops is still very high. In summary, the amortization of the cost of certification could be very rapid due to the added value of the final product.
c. Free samples of fruits delivered to schools may train future generations of consumers on the benefits of certified and/or organic Greek produce.
d. Farmers need additional information about natural (organic) fertilizers. Dung, the embedment of cereals and the rotation of crops improve the fertility of soil at a low cost. These materials also offer added value to the quality of the produce.
e. The public authorities of the Ministry of Agriculture should expand the concept of contracted agriculture to farmers. The main benefits are the unification of supplies, which guarantees cost reduction and the better launching of the products as a result of effective marketing performed by trading companies. Sales demand for specialized managers who have a daily view of the market, and this is applicable to specific private traders and to a minority of exporting cooperative unions. The segmentation of job attitudes is necessary: a farmer should start from the seed and finish with the qualitative product that comes out of his land. Afterwards, packaging, calibration, labelling and the other marketing activities should be launched by commercial experts.
f. Word of mouth among farmers is a very useful tool for the expansion of step (e). Public agronomists should prioritize the innovative farmers in each village who usually act as opinion leaders in their local communities.

4. Place- Distribution:
    a. The reallocation of the marketing strategy of cooperative unions in terms of specifying the selling prices may protect individual farmers from uncertain traders and low prices. Especially nowadays, many traders are running a great risk of bankruptcy due to the global financial crisis. In such an insecure environment, farmers face the danger of losing money on a daily basis via an increasing number of companies that cannot correspond to their debts.
    b. Producers have to put into effect a vertical integration of their business. In practice, this means that cooperative unions, which act for the benefit of public interest, should make direct partnerships with the retailers or even invest in their own retail stores. This integration

can also offer pure marketing data for future marketing strategies and from the better selling prices without intermediates.

c. The liberation of transport licenses has already increased competition in the domain of transport and therefore it has contributed to the decrease in the cost of transport. The Groupage model promotes minimum order per pallet as opposed to per full truck. So small-range farmers can directly reach distant foreign markets that they could not approach in the past. Especially in Greek agriculture where most individuals work on small or medium-sized land, the new transport legislation removes the trading barriers outside the country through better distribution of Greek products towards the global markets.
d. Last but not least, the expansion of new packages like plastic foldable boxes will reduce the total packaging costs. These are reusable plastic crates which are washed and decontaminated after each use by the owner company. The producer rents these crates for one whole circle, starting from the packing house and ending up in the final retail store. The philosophy is similar to the disposable carton boxes but the cost per box is about 10-30% cheaper, depending on the size. Additionally, these crates allow better air circulation among the products and thus they increase the shelf life.

### 6.2 Important issues for future research

This project has reached to some critical conclusions about the current and future situation of Greek agriculture. Furthermore, the analysis itself has proved that many more issues should be studied on future projects. The fortune of Greek fresh products is based on their trade in the domestic market, on exports and on competition with other countries. Each of the parameters above is linked to further steps which are exposed in detail below:

#### 6.2.1 Future research on the domestic Greek market

The benefits of contracted agriculture should be studied on future projects. The production cost per kilo for potato in Greece may vary from 0.24 euros for conventional agriculture to 0.14 euros for contracted cultures, as shown in the analysis above. Especially for the famous origins like Nevrokopi, the farmers should adopt such a mentality and expand contracts in the whole geographical area. This system demands close partnership from both parts, the producers and the traders. The latter obtain the ability to buy at really competitive prices but they have to support the former in knowledge and cheaper agricultural equipment than the typical agronomists' stores. So both parts collaborate on a win-win basis. The farmers know in advance that their production will be sold 100% and the traders have ensured

competitive prices for their customers. Future studies should concentrate on the famous origins of Greek agricultural products and the challenges on new markets by aggressive prices. The improved price for famous products can open new sales directions in both the domestic and the external market. The cost price saving in the production of potato (0.10 euros per kilo) is an important argument in favour of the same philosophy for the tomato and the other crops of fresh fruits and vegetables. Last but not least, contracted agriculture seems ideal for crop planning. Farmers who know the volume and seasonality of their production can easily plan to avoid unsold quantities that end up in the landfill.

Another proposal for the Greek agriculture is to supply retailers with private labels of fresh fruits and vegetables. This scenario can be split in two alternative solutions, as shown in section 6.1.2. The first is trading up and the second is trading down of private labels. These are premium quality and low quality products. They are both useful because in terms of brand awareness they advertise the retailer to his own clients. Besides, they contribute to the absorption of the whole production since farmers obtain new channels to the retail market. The choice for trading up or trading down depends on the maturity level of clients and this is also linked to their educational/financial status. Rich clients are more used to higher quality while the poor have a different behaviour. It is obvious that trading up is more demanding for both producers and packers. They have to become more innovative than the leader of the market and this demands excellence at all levels of the marketing mix (product characteristics, price, promotion and logistics).

### 6.2.2 Future research on Greek exports

The competitiveness of the agricultural sector is directly linked to a new national strategy which will reinforce the Greek image worldwide. The improvement of added value in production, the promotion with emphasis on innovation and extroversion, the implementation of quality management systems are issues for further investigation in the future. All the above contribute to the production of competitive, safe and high-quality products. The current and future production models have to consider their respect to the environment and to humans. Their target has to be the sustained fertility of land and the reduction of production cost. Farmers also need professional attitude, training and information about all new changes. Farmers' unions need motivation to create clusters that will have greater negotiating power. The increase of added value to fresh products has to be compared with the opportunity to increase

value in manufactured ones. The ready fresh salads, the packed mix of vegetables and the frozen fruits and vegetables are emerging, especially nowadays when the typical households have less time to prepare food. The evaluation of these products might lead to further restructuring of crops.

As far as the segment of pre-packed products concerned, many market sources claim that there are many problems with production and market structure. The latter suffers from hard competition. There are many small companies with poor technological equipment, many intermediaries and high transport costs on exports. The export activity generally delays whenever the public agronomists go on strikes in order to press the government for their requests. Such a demonstration took place in Greece last year and continued for almost one month, so many products finally rotted in the field or in storage. The consequences were even worse because the qualities that were exported during that period were degraded so customers became dissatisfied. Every single day of delay in the ordering execution causes quality problems and finally cancellation of many commercial contracts.

Another important issue is the necessity for immediate creation of a residue level control authority. Its role should be the control of chemical residue levels because the standards in this case are different per country. For instance, Russia which is a huge export destination, has asked for even lower levels of chemicals than the European legislation. During the last years, many Greek exports to that country were rejected because there was no official authority to check and confirm the approved chemical levels. Such a failure smears the fame of Greek fresh fruits and vegetables. The Russian market is very important and the risk of losing it will influence the income of producers, export companies and the national economy.

Greece should also concentrate on investigating the market of north European countries. The almost twenty five million inhabitants in Denmark, Finland, Iceland, Norway and Sweden are among the richest people in the world. They are fifth in European markets; the first is France followed by Germany, Italy and United Kingdom. The Swedish market is the most important of all (9 million people) followed by Denmark (5.3 million), Finland (5.1 million) and Norway (4.4 million). The key players in all these countries are large wholesalers and logistics companies. The big super market chains try to promote their own labels of products. The legislation is very strict regarding maximum residue levels and this may cause problems in exports. These countries usually make their purchases centrally through typical auctions in big suppliers. The agriculturally advanced countries like Spain remain the major suppliers of northern Europe. Therefore, Greek exporters should examine in detail all market standards before entering such a demanding market. Below we

present the typical characteristics of the fruit market in each country. Future marketers should seriously investigate these details for safe marketing plans regarding exports to Scandinavian countries (Source: Summary of the details presented in chapter 4).

### 6.2.3 Greek exports to other countries

This project clarifies the big gap in agricultural production among specific countries. Greece should take advantage of that and it should create future synergies with the domestic market for the maximisation of agricultural income. In the case study of France and Spain, we noticed that the consumption models of these countries are significantly different than the ones in Greece. These countries, for instance, consider "higher quality" the smaller potatoes which are considered second-rate for the Greek market. Therefore a good challenge for Greek producers and exporters should be the exploitation of these niche markets in a fast and significant way. Greek potato production always offers smaller potatoes on promotion so the optimum income can be achieved by market targeting per product category. Domestic market promises better prices for size A while external markets like France and Spain offer the best price for size B. On further analysis the traders can check the mix of sales and margins which may lead them to force farmers to specific varieties (crop planning) for maximization of profit.

In paragraph 5.5.4 we commented on the Turkish market which can absorb sufficient quantities of second-quality products. The country market is strictly price-oriented and this may be a positive channel for agricultural products which are rejected by European quality standards. We should also keep in mind that Turkey is still outside the European legislation and the accepted maximum residue levels (MRLs) are less strict than in European countries. On a synergy base this means that Greek traders can again find partnerships in Turkey and improve sales in products which would be rejected from Europe otherwise. This opportunity seems applicable for both potatoes and tomatoes while many more products of second quality should be probably investigated in the future, according to the consumption priorities of the country.

Poland also seems to be an attractive target for Greek exporters of organic products. In the case study of the country we noted that the gradual improvement of living standards allows the people to spend more on safe food. The trend of biological products is in development and it's still far away from the average numbers for the rest of Europe. In other words, the country has to develop both local production and imports. The latter is more important because the cold weather conditions of the

country do not allow much potential for national production. The key traders who will first gain market shares have more possibilities to become leaders in the Polish market. The timing seems to be ideal and besides they will get valuable experience in correcting any possible mistakes at the first entry into the market. Such an experience may affect a lot the future success and dominance because trading companies have the ability to absorb any negative consequences of their decisions since the market is still limited.

### 6.2.4 Future research on exports for other countries

Each one of the countries examined in this project presents some unique commercial challenges for further development. Future research should focus on the competitive advantages of each country with regard to exporting to the others. The niche markets of Scandinavian countries should also concern the Turkish traders. The current exporting companies have already sufficient know-how to cover the high quality demands of these markets. In addition, the rate of exchange of the national currency to the euro means extremely low prices for products so they become even more competitive compared to the other European countries.

The case study of FYROM has also shown that this country may play a major role in exports to north Europe. The geographical location of the country (lower transport costs due to shorter distances) and the modernization of cultivation methods are the key factors for future researchers. For the time being, the vast majority of the country's production is still conventional, with no quality certification. The implementation of modern technology will provide the local traders with two big advantages: first is the further drop in production cost (through increased yield) and second is the standardised quality to reach foreign markets.

In Cyprus the field cost has steadily increased due to drought problems during the last years. The high price of water and the high transport costs make the country less competitive compared to other European countries for many products. The unique alternative solution for the island seems to be the exploitation of crops which are unique to the island, like potatoes and mandarins (variety mantoras). These two products present unique qualities in terms of shelf life, freshness and taste. They are adapted to the unique climate and soil conditions of Cyprus, so it's impossible for other competitive countries to grow them in the future. The conclusion therefore is that Cyprus should focus on opening new markets and expanding the current ones for these two goods. The market challenges are very big, even in Greece. Although in Greek market, retailers offer both Greek and Cypriot potatoes, consumers prefer

the second. The next step for market share increase is the entry of the Cyprus product into new channels which up to now do not yet offer this product in retail market.

Finally, the case study of China should occupy seriously the future researchers. In chapter 4 we referred to the fast growing tomato business in this country. Modern cultivation methods guarantee for the maximization of yield and this contributes to the cost reduction. China is already a key player in worldwide industry. The future evolution of the agricultural section in the country is expected to change the financial balances in rest continents. There are two basic competitive advantages in this area; the cheap labour cost and the agricultural equipment (machinery, fertilizers, seeds). The issue is when future investors will decide to turn their interest from the industrial sector to the agricultural one.

## CHAPTER 7: NOTES AND REFERENCES

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- Τσαχουρίδης Π. Ιωάννης, (2008) *«Το μάνατζμεντ στον αγροτικό τομέα»,* Εκδόσεις Σταμούλη, σελ. 67-79, 133.


**7.3 interviews to Companies and Embassies**

- AB HYPERMARKET SA – GREECE (Mr. George Lathouras, Marketing Director)
- AGRICULTURAL AND INDUSTRIAL COOPERATIVE UNION OF TYMPAKI – CRETE (Mr. John Charalambakis, General Manager)
- CAMPEOL SA CARVIN – FRANCE (Mr. Matthias Couche Fernandez, Sales Director)
- DALTEX SA- EGYPT (potatoes' export)
- ECPA (European Plant Protection Union, Mr. Friedhelm Schmide, CEO)
- EUROMIM GLASSHOUSES VALANDONO- FYROM (Mr Gorgi Atnandov, CEO)
- EXPORT UNION IN ANTALYA –TURKEY (Mr. Mustafa Satisi, President)
- FARMER SA – GREECE (Mr. Theologos Kosmidis, Owner amd CEO)
- GREEN FACTORY SA – POLAND (Mr. Krzysztof Wierzbicki, Marketing Director)
- Greek Embassy in Poland (Mr. Theodoros Ksipolias, Consultant)
- GEOPLANT SA VARDA – GREECE (Mr. John Diasakos, CEO)
- HANA FRESH LTD
- Mr. Ahmet Giavous –Turkey (packing house, Antalya)
- Mr. Mustafa Turkmenoglou –Turkey (packing house, Smyrna)
- Mr. Thanasis Moschakos & Mr. Omder Delioglu –Turkey (packing house, Kumluca)
- NATURAL MANIA SA BARCELONA - SPAIN (Mr. Fernando Calderon, Sales Director)

- OIKONOMOTECHNIKI LTD – GREECE (Mr. Pantelis Skarlatos, CEO)
- SEDIGEP LTD NICOSIA- CUPRUS (Mr Koulis Fylaktou, CEO)
- SYNGENTA SA WARSAW – POLAND (Mrs. Elena Ozeritskaya, Customer Care dpt.)
- VEGLAND CY LTD – GREECE (Mr. Charalampos Nikolaou, Owner and CEO)
- ZACHARIADAKIS & CO – CRETE (Mr. George Zachariadakis, Owner)
- ZACHAROPOULOS SOTIRIS KYPARISSIA – GREECE (Packing House Owner)

**7.4 Researches - Magazines**


- AC Nielsen (2004*), "Quantitative research for the section of super market"*
- AC Nielsen (2003, July), *"The power of private label – A review of growth trends around the word"*.
- Agricultural technology (2006, December), «The current and future situation of fresh fruits and vegetables trade in Greece», pp. 24-39.
- ICAP (2003, December), *«Research about cash & carry and super market section in Greece»*, No 496.
- Centrum Research (2004), *«Quantitative research for Brand names»*
- Market zoom (2005, September), *«Answer to the discount challenget»*, pp.38-44.
- Market zoom (2005, February), *«The generic and private label products»,* pp. 53-58.
- Panorama of Greek super markets (2005, November), *«Stores number per brand of super markets in Greece»*, issue 9.
- Retail Today (2009), *«The consumer's attitude towards new products»*, edition 9
- Self service (2005, March), *«Trap cooperation with discount super markets»*, pp. 62-63
- Self service (2004, October), *«Evolutions in super markets branch»*, pp. 12-21.
- Self service (2004, January), «Reportage on private labels*»*, pp. 72-78.
- Food and Drink (2009, September), «Market research by the Central Fruit Market of Salonika – 852 questionnaires», pp. 35-42


**7.5 Web sites**


- www.andrew.cmu.edu
- www.aueb.gr
- www.emeraldinsight.com
- www.carrefour.com

- www.google.gr
- www.icap.gr
- www.in.gr
- www.plma.com
- www.statistics.gr
- www.plus.gr
- www.aldi.com
- www.aua.gr
- www.greekretail.gr
- www.campeol.com
- www.frutonea.gr
- www.farmer.com
- www.westernfarmpress.com
- www.planetretail.net
- www.statbank.gr
- www.retailtoday.gr
- www.agrotypos.gr
- www.eurostat.com
- www.hellastat.gr
- www.esye.gr
- www.statistics.gr
- www.hellastat.gr
- www.learnmarketing.net

## CHAPTER 8: APPENDICES

### 8.1 Tables and Graphs



| Table 2.1 | total | | | |
|---|---|---|---|---|
| crop | land (hectares) | production (tons) | % of t. land | % of t. production |
| total potato | 38596 | 933580 | 19.31% | 15.50% |
| tomato for juice | 19575 | 1227832 | 9.79% | 20.39% |
| summer potato | 15763 | 423040 | 7.89% | 7.02% |
| tomato for food | 15491 | 735160 | 7.75% | 12.21% |
| spring potato | 15472 | 348480 | 7.74% | 5.79% |
| watermelon | 14320 | 677935 | 7.16% | 11.26% |
| cabbage | 7411 | 174878 | 3.71% | 2.90% |
| autumn potato | 7361 | 162060 | 3.68% | 2.69% |
| beans | 6503 | 69121 | 3.25% | 1.15% |
| melon | 6440 | 143383 | 3.22% | 2.38% |
| dry onions | 5686 | 157726 | 2.84% | 2.62% |
| asparagus | 4484 | 17966 | 2.24% | 0.30% |
| pepper | 4093 | 125277 | 2.05% | 2.08% |
| zuchini | 3943 | 92840 | 1.97% | 1.54% |
| lettuce | 3879 | 75142 | 1.94% | 1.25% |
| spinach | 3780 | 52384 | 1.89% | 0.87% |
| cauliflower | 3439 | 59637 | 1.72% | 0.99% |
| eggplant | 2708 | 69643 | 1.35% | 1.16% |
| radice | 2455 | 35103 | 1.23% | 0.58% |
| artichoke | 2393 | 22903 | 1.20% | 0.38% |
| cucumber | 2275 | 190587 | 1.14% | 3.16% |
| fresh onions | 2057 | 30356 | 1.03% | 0.50% |
| leak | 1545 | 37024 | 0.77% | 0.61% |
| okra | 1532 | 11234 | 0.77% | 0.19% |
| fresh peas | 1486 | 9606 | 0.74% | 0.16% |
| carrot | 1183 | 37115 | 0.59% | 0.62% |
| dry garlic | 1106 | 9411 | 0.55% | 0.16% |
| parsley | 904 | 21317 | 0.45% | 0.35% |
| broad beans | 895 | 6740 | 0.45% | 0.11% |
| beetroot | 845 | 19112 | 0.42% | 0.32% |
| celery | 781 | 17742 | 0.39% | 0.29% |
| anise | 515 | 9444 | 0.26% | 0.16% |
| strawberry | 431 | 13243 | 0.22% | 0.22% |
| fresh garlic | 317 | 2425 | 0.16% | 0.04% |
| radish | 222 | 3028 | 0.11% | 0.05% |
| **total** | **199886** | **6022474** | **100.00%** | **100.00%** |
| **Reference: Ministry of Agricultural development and food, 2004** | | | | |

| Table 2.2 | Wholesale price in Euros/year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **product** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** |
| **potatoes** | 0.34 | 0.23 | 0.38 | 0.24 | 0.29 | 0.33 | 0.31 | 0.27 |
| | | | | | | | | |
| **Source: Ministry of Agricultural development and food, 2009** | | | | | | | | |



| **Table 2.3** | **Avg. farmer’s price of outdoor tomato** | **Avg. farmer’s price of greenhouse tomato** |
|---|---|---|
| **year** | **euros** | |
| 2002 | 0,26 | 0.81 |
| 2003 | 0,37 | 0.78 |
| 2004 | 0,2 | 0.66 |
| 2005 | 0,33 | 0.58 |
| 2006 | 0,25 | 0.62 |
| 2007 | 0,29 | 0.67 |
| 2008 | 0,24 | 0.57 |
| | | |
| **Source: National Statistical Service of Greece, 2002-2008** | | |



| **Table 2.4** | **cost price factors in Greek agricultural section** |
|---|---|
| increase in fuels prices (+41.4%) | |
| increase in fertilizers prices (+32.2%) | |
| increase in seeds prices (+12.3%) | |
| increase in pesticides prices (+9%) | |
| increase in agric. Eguipment repairs (+10%) | |
| decrease in products prices (-10%) | |
| increase in labour cost (+3.8%) | |
| increase in land rent (+1.2%) | |
| increase in agric. Loans interest (+13%) | |
| | |
| **Source: National Statistical Service of Greece, 2005-2007** | |

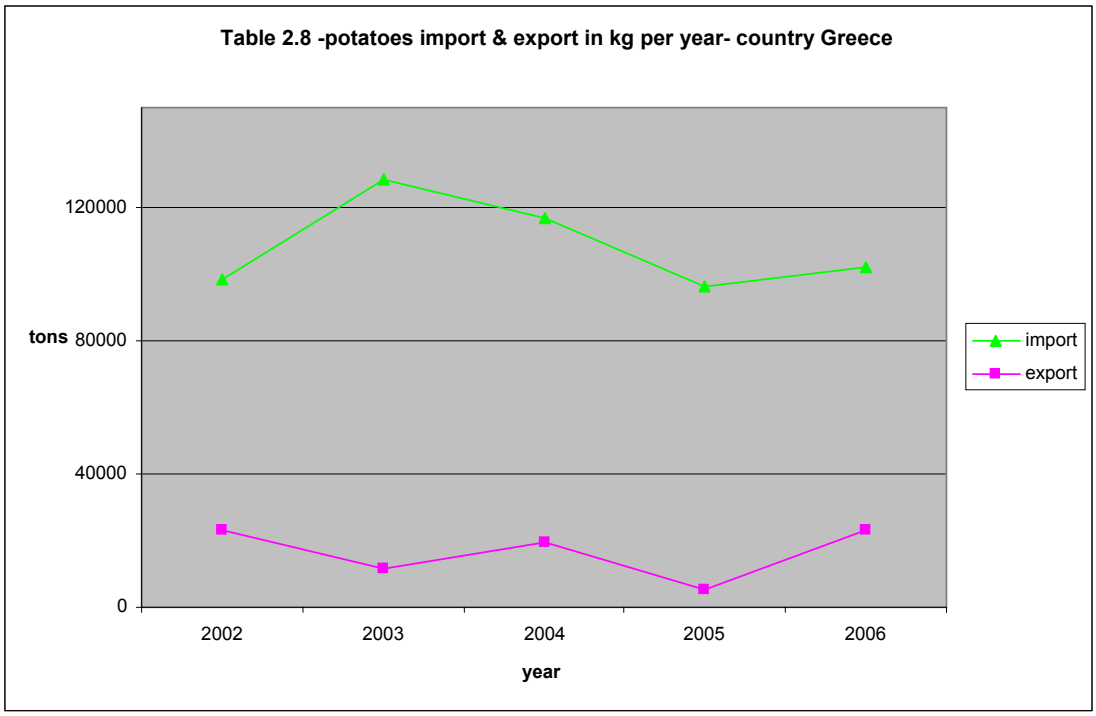


| **Table 2.5** | |
|---|---|
| **European countries** | **non European countries** |
| Greece | Turkey |
| France | Egypt |
| Spain | Fyrom |
| Poland | Scandinavian countries |
| Cyprus | China |

| Table 2.6 | |
|---|---|
| **country** | **sample frame** |
| Greece | farmers, traders, cooperative unions |
| France | traders |
| Spain | traders |
| Poland | traders |
| Cyprus | traders |
| Turkey | traders |
| Egypt | traders |
| Fyrom | traders |
| Scandinavian | Embassy, national statistic service |
| China | Embassy |



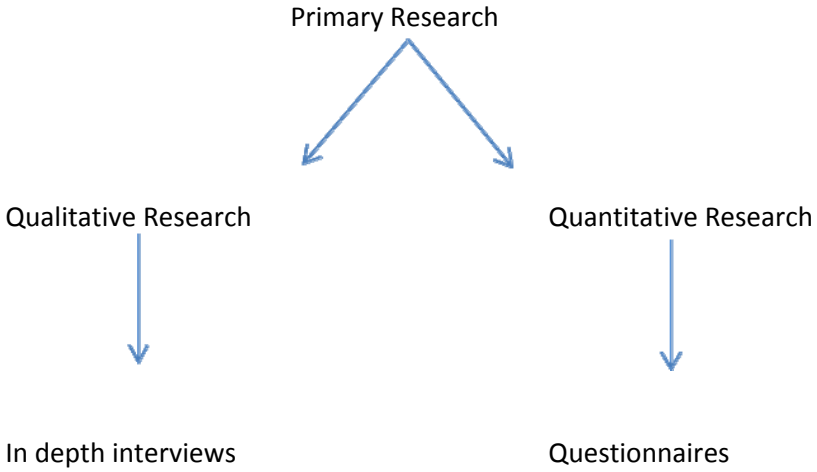

**Source: (National Statistic Service, Eurostat)**




**Source: (National Statistic Service, Eurostat)**



| Table 2.9 country | kilos | % |
|---|---|---|
| **Egypt** | 50,896,710 | 49.81% |
| **France** | 22,561,905 | 22.08% |
| **Germany** | 6,597,142 | 6.46% |
| **Cyprus** | 5,875,969 | 5.75% |
| **Turkey** | 4,834,574 | 4.73% |
| **under equator** | 4,367,700 | 4.27% |
| **Italy** | 3,246,387 | 3.18% |
| **Belgium** | 1,345,619 | 1.32% |
| **Rest** | 2,451,509 | 2.40% |
| **Total** | 102,177,515 | 100.00% |
| | | |
| **Source: National Statistic Service - Eurostat** | | |






| **Table 4.1** | **Spanish main retailers in 2005** | |
|---|---|---|
| **store name** | **sales (millions euros)** | **No of stores** |
| El Corte Ingles | 15598 | 1033 |
| Carrefour | 11945 | 3003 |
| Mercadona | 9602 | 960 |
| Eroski | 5478 | 1843 |
| Auchan (Alcampo) | 4196 | 286 |
| Caprado | 2300 | 579 |
| Metro Group | 2309 | 62 |
| Dinosol | 1971 | 482 |
| Schwarz Group | 1700 | 390 |
| SPAR Espanola | 1348 | 1543 |
| | | |
| **Source: Planet Retail, 2005** | | |

| Table 4.2 | Structure of Spanish food stores in 2005 | |
|---|---|---|
| stores type | sales (millions euros) | No of stores |
| super market- urban | 28750 | 8373 |
| department | 19849 | 386 |
| discount | 6274 | 3569 |
| Cash & Carry | 3238 | 292 |
| Convinience/ Forecourt | 2179 | 6889 |
| Virtual | 239 | - |
| | | |
| **Source: Planet Retail, 2005** | | |



| Table 4.3 | glasshouses surface worldwide |
|---|---|
| country | glasshouses in hectares |
| China | 1,000,000 |
| Japan | 53,518 |
| Korea | 52,189 |
| Spain | 33,750 |
| Italy | 26,000 |
| Turkey | 22,064 |
| Holland | 10,416 |
| USA | 7,016 |
| France | 8,108 |
| Greece | 4,000 |
| Israel | 3,510 |
| | |
| **Source: Mustafa Satisi, President of exports’ Union in Antalya** | |



| Table 4.4 exports of fresh fruits and vegetables from Turkey (January 2005-October 2006) | | |
|---|---|---|
| | 2005/01/01-2005/10/31 | 2006/01/01-2006/10/31 |
| product | kilos | kilos |
| fruits | 298,120,490 | 320,494,849 |
| citrus | 568,949,225 | 626,436,830 |
| vegetables | 498,734,142 | 512,959,901 |
| total | 1,365,803,857 | 1,459,891,580 |
| | | |
| **Source: Eurostat, 2006** | | |

| Table 4.5<br>top 10 Turkish fruits in exports | | |
|---|---|---|
| | 2005/01/01-<br>2005/10/31 | 2006/01/01-<br>2006/10/31 |
| **product** | **kilos** | **kilos** |
| cherries | 35,876,524 | 54,104,998 |
| grapes | 129,893,564 | 131,100,929 |
| peaches | 39,618,443 | 39,209,533 |
| figs | 9,603,825 | 8,918,450 |
| strawberries | 6,313,939 | 11,794,102 |
| apricots | 9,948,195 | 13,984,222 |
| apples | 21,199,998 | 22,427,221 |
| watermelons | 15,729,394 | 16,184,075 |
| pears | 8,582,336 | 5,260,748 |
| melons | 8,082,476 | 7,055,110 |
| total | 284,848,694 | 310,039,388 |
| | | |
| **Source: Eurostat, 2006** | | |



| Table 4.6<br>top 10 Turkish vegetables in exports | | |
|---|---|---|
| | 2005/01/01-<br>2005/10/31 | 2006/01/01-<br>2006/10/31 |
| **product** | **kilos** | **kilos** |
| tomatoes | 223,722,560 | 265,217,049 |
| peppers | 54,251,222 | 50,329,342 |
| cucumbers | 20,361,409 | 31,785,320 |
| onions | 61,414,601 | 79,637,632 |
| mushrooms | 505,812 | 959,052 |
| carrots | 60,569,281 | 36,148,041 |
| leak | 8,398,315 | 9,885,509 |
| potatoes | 75,969,087 | 15,487,134 |
| zucchini | 4,805,616 | 5,812,301 |
| eggplants | 5,183,325 | 3,551,250 |
| total | 515,181,228 | 498,812,630 |
| | | |
| **Source: Eurostat, 2006** | | |

| Table 4.7<br>Cyprus production cost in field | |
|---|---|
| **type of expenses** | **cost (Euros) per kilo** |
| seeds | 0.033 |
| seeds' cutting | 0.003 |
| initial fertilizers | 0.015 |
| watering | 0.015 |
| chemical pesticides | 0.020 |
| rest fertilizers | 0.006 |
| sprays | 0.017 |
| harvest | 0.039 |
| energy | 0.015 |
| owner's labour | 0.030 |
| equipment service | 0.004 |
| total cost per kilo | 0.196 |
| | |
| **Source: The marketing dpt. of Sedigep ltd, 2010** | |



| **Table 5.1** | **Prices (Euros) DDP to Greece** | |
|---|---|---|
| **tomato** | | |
| **country** | **DDP price** | **DDP price Greece** |
| **Poland** | 0.85 | 0.36 |
| **Turkey** | 0.37 | 0.36 |
| **Fyrom** | 0.28 | 0.36 |
| **potato** | | |
| **country** | **DDP price** | **DDP price Greece** |
| **France** | 0.24 | 0.25 |
| **Spain** | 0.27 | 0.25 |
| **Turkey** | 0.27 | 0.25 |
| **Egypt** | 0.22 | 0.25 |
| **Cyprus** | 0.33 | 0.25 |
| | | |
| **Source: Summary of the analysis in chapter 5** | | |

| Table 5.2 | cost (Euros) per kilo in Greece | |
|---|---|---|
| | tomato | potato |
| field | 0.12 | 0.14 |
| glasshouse | 0.18 | |
| packaging | 0.1 | 0.05 |
| transport | 0.08 | 0.06 |
| t.cost per kg | 0.36 | 0.25 |
| | | |
| Source: Summary of the analysis in SPSS of farmers’ questionnaires in unit 5.1.1 | | |



| Table 5.3 | cost (Euros) per kilo in France |
|---|---|
| | potato |
| field | 0.10 |
| packaging | 0.04 |
| transport | 0.10 |
| t. cost per kg | 0.24 |
| | |
| Source: Summary of the case study of France in unit 5.2 | |



| Table 5.4 | cost (Euros) per kilo in Spain |
|---|---|
| | potato |
| field | 0.10 |
| packaging | 0.02 |
| transport | 0.15 |
| t.cost per kg | 0.27 |
| | |
| Source: Summary of the case study of Spain in unit 5.3 | |

| Table 5.5 | cost (Euros) per kilo in Poland<br>tomato |
|---|---|
| **field** | 0.60 |
| **packaging** | 0.07 |
| **transport** | 0.18 |
| **t.cost per kg** | 0.85 |
| | |
| **Source: Summary of the case study of Poland in unit 5.4** | |



| Table 5.6 | cost (Euros) per kilo in Turkey | |
|---|---|---|
| | **tomato** | **potato** |
| **field** | | 0.12 |
| **glasshouse** | 0.15 | |
| **packaging** | 0.1 | 0.05 |
| **transport** | 0.12 | 0.1 |
| **t.cost per kg** | 0.37 | 0.27 |
| | | |
| **Source: Summary of the case study of Turkey in unit 5.5** | | |



| Table 5.7 | cost (Euros) per kilo in Egypt<br>potato |
|---|---|
| **field** | 0.12 |
| **glasshouse** | |
| **packaging** | 0.05 |
| **transport** | 0.05 |
| **t.cost per kg** | 0.22 |
| | |
| **Source: Summary of the case study of Egypt in unit 5.6** | |

| Table 5.8 | cost (Euros) per kilo in Fyrom tomato |
|---|---|
| **field** | |
| **glasshouse** | 0.08 |
| **packaging** | 0.05 |
| **transport** | 0.15 |
| **t.cost per kg** | 0.28 |
| | |
| **Source: Summary of the case study of Fyrom in unit 5.7** | |



| Table 5.9 | Cost (Euros) per kilo in Cyprus potato |
|---|---|
| **field** | 0.20 |
| **glasshouse** | |
| **packaging** | 0.05 |
| **transport** | 0.08 |
| **t.cost per kg** | 0.33 |
| | |
| **Source: The marketing dpt. of Sedigep ltd, 2010** | |



| Table 5.10 | | | |
|---|---|---|---|
| **Comparison of tomato DDP prices** | | | |
| **country** | **DDP price** | **DDP price Greece** | **% difference** |
| **Poland** | 0.85 | 0.36 | -136.11% |
| **Turkey** | 0.37 | 0.36 | -2.78% |
| **Fyrom** | 0.28 | 0.36 | 22.22% |

| Comparison of potato DDP prices | | | |
|---|---|---|---|
| **country** | **DDP price** | **DDP price Greece** | **% difference** |
| **France** | 0.24 | 0.25 | 4.00% |
| **Spain** | 0.27 | 0.25 | -8.00% |
| **Turkey** | 0.27 | 0.25 | -8.00% |
| **Egypt** | 0.22 | 0.25 | 12.00% |
| **Cyprus** | 0.33 | 0.25 | -32.00% |
| | | | |
| **Source: Summary of the analysis in chapter 5** | | | |



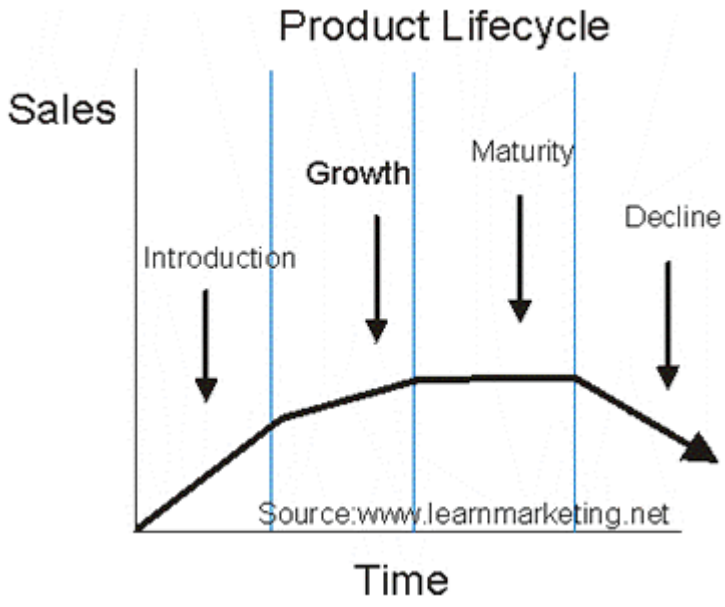
| Table 5.11 | | |
|---|---|---|
| **local market of biological food 1996-2007 in euros** | | |
| **year** | **value** | **change** |
| 1999 | 7,600,000 | |
| 2000 | 12,900,000 | 69.70% |
| 2001 | 15,500,000 | 20.20% |
| 2002 | 18,500,000 | 19.40% |
| 2003 | 24,000,000 | 29.70% |
| 2004 | 30,700,000 | 27.90% |
| 2005 | 39,800,000 | 29.60% |
| 2006 | 51,800,000 | 30.20% |
| 2007 | 64,750,000 | 25% |
| | | |
| **Source: ICAP SA** | | |

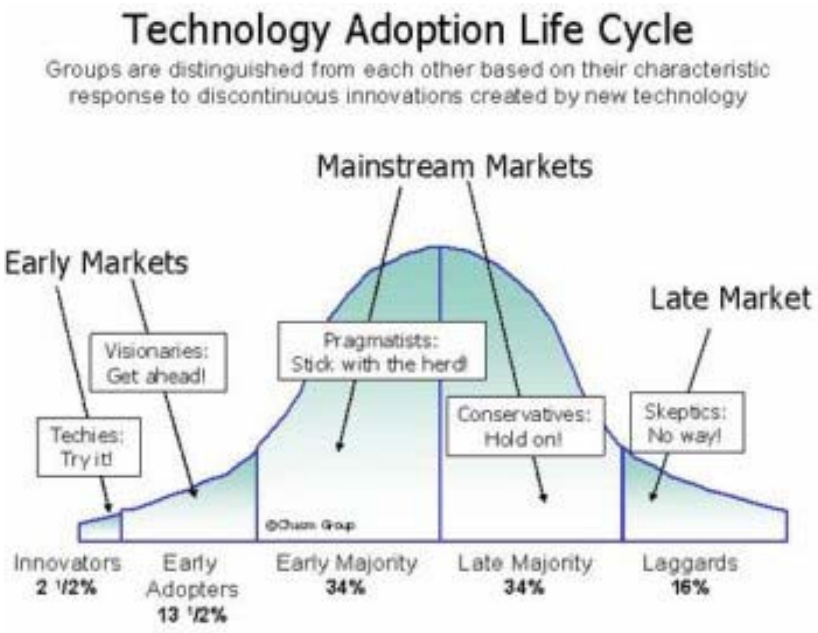


| Table 5.12 | | |
|---|---|---|
| **market of imported biological food 1999-2009 in euros** | | |
| **year** | **value** | **change** |
| 1999 | 1,900,000 | |
| 2000 | 3,100,000 | 63.20% |
| 2001 | 5,500,000 | 77.40% |
| 2002 | 9,500,000 | 72.70% |
| 2003 | 16,000,000 | 68.40% |
| 2004 | 19,000,000 | 18.80% |
| 2005 | 23,000,000 | 21.10% |
| 2006 | 33,700,000 | 46.50% |
| | | |
| **Source: ICAP SA** | | |

| Table 5.13 | | |
|---|---|---|
| **evolution of companies in vegetative biological production** | | |
| **year** | **value** | **change** |
| 1993 | 165 | |
| 1994 | 489 | 196% |
| 1995 | 639 | 31% |
| 1996 | 1109 | 74% |
| 1997 | 1683 | 52% |
| 1998 | 2,350 | 42% |
| 1999 | 2,611 | 12% |
| 2000 | 3,036 | 17% |
| 2001 | 3,419 | 20% |
| 2002 | 3,343 | 2% |
| 2003 | 3,321 | 5% |
| 2004 | 3,804 | 15% |
| 2005 | 5,738 | 52% |
| 2006 | 7,641 | 28% |
| | | |
| **Source: DIO Certification company** | | |








Source: (“the principles of marketing”, Philip Kotler & Gary Armstrong, 13th edition, 2009)

**8.2 Questionnaires for Greek farmers**

## Middlesex University
Covering letter

Dear Sir,

In order to complete my study on production costs of potato and tomato crops, I kindly ask you to spend a few minutes and fill the questionnaire below. Please take into consideration that the results of my study are expected to be valuable for you also, since my target is to minimise farmers' expenses for the crops mentioned above, so that Greek agricultural production can compete on fair terms with imports from other countries.
Finally, the implementations of my project will prove how exports take place in terms of quality, packaging and price demands. This may also help you create a better approach to foreign fruit markets by analysing the specifications above compared to your facilities.

Thank you in advance

Elias Valogiannis

Questions

1. Please pass this form only to producers of tomato, or potato or both

2. How many measures of area (1000 sq. meters) do you grow? You should also mention which product.

10-20 21-50 more than 50

3. What is the average cost in Euros of seeds for each measure of your crop?
   Tomato….
   Potato…
4. What is the average cost in Euros of fertilizers for each measure of your crop?
   Tomato….
   Potato…

5. What is the average cost in Euros of pesticides for each measure of your crop?
   Tomato….
   Potato…

6. What is the average labor cost in Euros per measure of your crop?
   Tomato….
   Potato…

7. What other cost factors should be included in your business? Please write down the cost per measure for each one. If the tomato crop is in greenhouse, please mention here.

a.
b.
c.
d.
e.

Please place X in the appropriate space below that you agree with:

| **FARMERS PERCEPTION ABOUT PRODUCT QUALITY** | Totally disagree | disagree | Neither disagree/nor agree | agree | Totally agree |
|---|---|---|---|---|---|
| **I implement in my business the latest agricultural technologies** | | | | | |
| **I adopt friendly methods to the environment** | | | | | |
| **I always try to minimize the chemicals for quality improvement** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **I'd like to turn to biological crops at some point of time** | | | | | |
| **I believe in the future of biological crops** | | | | | |
| **I try to achieve the most commercial size, shape and aspect in my products** | | | | | |
| **I throw away any production of second quality in my fields** | | | | | |
| **I trust only the famous-more expensive brands of chemicals for my fields.** | | | | | |
| **The packaging materials are according to European Union standards** | | | | | |
| **I believe that the final appearance of the product inside the box is very important for the sale price** | | | | | |
| **I advertise my own logo on the boxes of the product** | | | | | |

Here I express Greek farmers' intention to improve further

| **EVALUATION OF GREEK PRODUCTION BY GREEK FARMERS** | Totally disagree | disagree | Neither disagree/nor agree | agree | Totally agree |
|---|---|---|---|---|---|
| **They are nutritional products** | | | | | |
| **They are high quality products** | | | | | |
| **They are qualitative and competitive to other European countries** | | | | | |
| **They have all the necessary advantages to enter new markets** | | | | | |
| **They are satisfactory choices regarding prices to the final consumer**<br><br>**I find the comparison of quality and price very fair for the end user** | | | | | |

| **GREEK FARMERS' ATTITUDE TOWARDS IMPORTED TOMATOES AND POTATOES** | Totally disagree | disagree | Neither disagree/nor agree | agree | Totally agree |
|---|---|---|---|---|---|
| **As a customer, I would like to try imported tomatoes and potatoes** | | | | | |
| **I would buy them during "out of season periods" of Greek production.** | | | | | |
| **I mainly try to storehouse my own production and cover the maximum of my family's needs.** | | | | | |
| **I would be interested in trying agricultural products coming from the European union (Belgium, France,** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Poland).** | | | | | |
| **I would be interested in trying agricultural products coming outside the European Union (Egypt, Turkey)** | | | | | |
| **I trust the quality of European Union agricultural products** | | | | | |
| **I trust the quality of non European Union agricultural products** | | | | | |

Here I express the image of Greek farmers and how they evaluate themselves as personalities compared to the rest of the European competition

| **PSYCHOGRAPHIC CHARACTERISTICS OF GREEK FARMERS** | Totally disagree | disagree | Neither disagree/nor agree | agree | Totally agree |
|---|---|---|---|---|---|
| **I usually buy famous brands of agricultural equipment** | | | | | |
| **I care about the price especially whenever I buy high value products** | | | | | |
| **I am interested in searching for special promotional prices for my purchases** | | | | | |
| **I often look for cheap prices in newspapers or agricultural magazines** | | | | | |
| **I am familiar with the use of the Internet for alternative purchases** | | | | | |
| **Whenever I use expensive seeds, fertilizers and pesticides I feel fully satisfied** | | | | | |
| **I feel proud when telling my friends that I buy expensive equipment.** | | | | | |
| **I am more interested in getting better quality/price relationship for my crop's needs** | | | | | |
| **My friends may accuse me for being "mean" if I buy always the cheapest equipment** | | | | | |
| **I mainly use fertilizers and pesticides as a precaution to avoid any damage to my crops** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Whenever I buy cheap equipment I believe that I made a clever purchase** | | | | | |
| **I make suppressive use of fertilizers and pesticides to avoid any damage to my crops.** | | | | | |

**DEMOGRAPHIC CHARACTERISTICS OF GREEK FARMERS**

**Sex**

☐ Female ☐ Male

**Basic income is coming from**

☐ Potato crops
☐ Tomato crops
☐ Above two both
☐ Other crops
☐ Cattle - breeding
☐ Outside agriculture

**Education**

☐ Primary school
☐ Highschool
☐ Lyceum
☐ Bachelor degree
☐ Master's degree

**Family status**

☐ Married
☐ Single
☐ Divorced

**Do you have kids?**

☐ Yes ☐ no

**Age**

☐ Up to 20 years old
☐ 21 – 30
☐ 31- 40
☐ 41-50
☐51-60
☐Over 60

**Which level of annual net income do you belong to according to your whole agricultural activity?**

☐ Up to 10000 Euros
☐ 10,001– 20,000 Euros
☐ 20,001 – 30,000 Euros
☐ 35001 – 50,000 Euros
☐ over 50,001 Euros

I really appreciate your help

Estimations:

1. In question 2 the surface of 10-20 measures of 1000 sq. meters is supposed to be non-professional use, 21-50 and 51 plus considered professional.
2. We always take into consideration the small size of Greek agricultural land. The division of land for Greek farmers refers to 0,1 of a hectare. However, on the final analysis, I consider the real equivalent of surface in hectares.

### 8.3 Analysis in SPSS Data File - Research Statements and Research Hypotheses

### 1: The average field cost in Euros per kilo of product (yellow cells = potato average cost, blues cells = tomato average cost)

| q4 | q5 | results | | | |
|---|---|---|---|---|---|
| 2,5 | 1200 | 0,48 | | | |
| 2,5 | 900 | 0,36 | | | |
| 2,5 | 1220 | 0,488 | | | |
| 2,8 | 1000 | 0,357143 | | | |
| 3 | 1100 | 0,366667 | | | |
| 3 | 900 | 0,3 | | | |
| 3 | 900 | 0,3 | | | |
| 3 | 800 | 0,266667 | | | |
| 3 | 1300 | 0,433333 | | | |
| 3 | 1100 | 0,366667 | | | |
| 3 | 1300 | 0,433333 | | | |
| 3 | 1000 | 0,333333 | | | |
| 3 | 750 | 0,25 | | | |
| 3 | 920 | 0,306667 | | | |
| 3,3 | 980 | 0,29697 | | | |
| 3,5 | 1000 | 0,285714 | | | |
| 3,5 | 1100 | 0,314286 | | | |
| 3,5 | 900 | 0,257143 | | | |
| 3,5 | 1100 | 0,314286 | | | |
| 3,5 | 950 | 0,271429 | | | |
| 3,5 | 800 | 0,228571 | | | |
| 3,5 | 1250 | 0,357143 | | | |
| 3,5 | 1100 | 0,314286 | | | |
| 3,5 | 1000 | 0,285714 | | | |
| 3,5 | 900 | 0,257143 | | | |
| 3,5 | 900 | 0,257143 | | | |
| 3,5 | 1300 | 0,371429 | | | |
| 3,7 | 980 | 0,264865 | | | |
| 3,7 | 1200 | 0,324324 | | | |
| 3,8 | 920 | 0,242105 | | | |
| 3,8 | 1100 | 0,289474 | | | |
| 4 | 1300 | 0,325 | | | |
| 4 | 950 | 0,2375 | | | |
| 4 | 950 | 0,2375 | | | |
| 4 | 850 | 0,2125 | | | |
| 4 | 1050 | 0,2625 | | | |
| 4 | 1250 | 0,3125 | | | |
| 4 | 1200 | 0,3 | | | |
| 4 | 950 | 0,2375 | | | |
| 4 | 1400 | 0,35 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 1250 | 0,3125 | | | |
| 4 | 700 | 0,175 | | | |
| 4,2 | 1200 | 0,285714 | | | |
| 4,3 | 950 | 0,22093 | | | |
| 4,5 | 950 | 0,211111 | | | |
| 4,5 | 650 | 0,144444 | | | |
| 4,5 | 1200 | 0,266667 | | | |
| 4,5 | 1050 | 0,233333 | | | |
| 4,5 | 930 | 0,206667 | | | |
| 4,5 | 850 | 0,188889 | | | |
| 4,5 | 1200 | 0,266667 | | | |
| 4,5 | 1350 | 0,3 | | | |
| 4,5 | 760 | 0,168889 | | | |
| 5 | 800 | 0,16 | | | |
| 5 | 700 | 0,14 | | | |
| 5 | 700 | 0,14 | | | |
| 5 | 1000 | 0,2 | | | |
| 5 | 650 | 0,13 | | | |
| 5 | 670 | 0,134 | | | |
| 5 | 640 | 0,128 | | | |
| 5 | 800 | 0,16 | | | |
| 5 | 800 | 0,16 | | | |
| 5,5 | 500 | 0,090909 | | | |
| 5,5 | 900 | 0,163636 | | | |
| 5,5 | 650 | 0,118182 | | | |
| 5,5 | 780 | 0,141818 | | | |
| 5,5 | 710 | 0,129091 | | | |
| 5,5 | 700 | 0,127273 | | | |
| 5,5 | 750 | 0,136364 | | | |
| 5,5 | 900 | 0,163636 | | | |
| 5,7 | 730 | 0,12807 | | | |
| 5,8 | 750 | 0,12931 | | | |
| 6 | 800 | 0,133333 | | | |
| 6 | 750 | 0,125 | | | |
| 6 | 800 | 0,133333 | | | |
| 6 | 800 | 0,133333 | | | |
| 6 | 850 | 0,141667 | | | |
| 6 | 750 | 0,125 | | | |
| 6 | 800 | 0,133333 | | | |
| 6 | 850 | 0,141667 | | | |
| 6 | 670 | 0,111667 | | | |
| 6 | 820 | 0,136667 | | | |
| 6 | 780 | 0,13 | | | |
| 6 | 800 | 0,133333 | | | |
| 6 | 850 | 0,141667 | | | |
| 6 | 800 | 0,133333 | | | |
| 6,5 | 700 | 0,107692 | **Potato crop** | | |
| 6,5 | 600 | 0,092308 | **Production in tons** | **Expenses in euros** | **Average field cost per kilo** |
| 6,5 | 800 | 0,123077 | **397,6** | **82160** | **0,21** |

| | | | | | |
|---|---|---|---|---|---|
| 7 | 1200 | 0,171429 | | | |
| 7 | 850 | 0,121429 | | | |
| 7 | 850 | 0,121429 | | | |
| 7 | 900 | 0,128571 | | | |
| 7 | 750 | 0,107143 | | | |
| 7 | 750 | 0,107143 | | | |
| 7 | 800 | 0,114286 | | | |
| 7,5 | 1100 | 0,146667 | | | |
| 7,5 | 1000 | 0,133333 | | | |
| 7,5 | 800 | 0,106667 | | | |
| 8 | 900 | 0,1125 | | | |
| 8 | 950 | 0,11875 | | | |
| 8 | 1000 | 0,125 | | | |
| 8 | 900 | 0,1125 | | | |
| 8 | 1100 | 0,1375 | | | |
| 8 | 800 | 0,1 | | | |
| 8 | 1300 | 0,1625 | | | |
| 8,5 | 1200 | 0,141176 | | | |
| 9 | 2900 | 0,322222 | | | |
| 9 | 900 | 0,1 | | | |
| 9 | 1100 | 0,122222 | | | |
| 9 | 1450 | 0,161111 | | | |
| 9 | 1200 | 0,133333 | | | |
| 9 | 1600 | 0,177778 | | | |
| 10 | 2500 | 0,25 | | | |
| 10 | 2800 | 0,28 | | | |
| 10 | 1170 | 0,117 | | | |
| 11 | 1400 | 0,127273 | | | |
| 11 | 1600 | 0,145455 | | | |
| 12 | 1600 | 0,133333 | | | |
| 12 | 2000 | 0,166667 | | | |
| 14 | 2250 | 0,160714 | | | |
| 14 | 2000 | 0,142857 | | | |
| 14,5 | 2500 | 0,172414 | | | |
| 15 | 3500 | 0,233333 | | | |
| 15 | 3100 | 0,206667 | | | |
| 15,5 | 1920 | 0,123871 | | | |
| 16 | 4900 | 0,30625 | | | |
| 16 | 4900 | 0,30625 | | | |
| 16 | 2900 | 0,18125 | | | |
| 16 | 5000 | 0,3125 | | | |
| 16 | 6500 | 0,40625 | | | |
| 16 | 3100 | 0,19375 | | | |
| 16 | 2600 | 0,1625 | | | |
| 16 | 3000 | 0,1875 | | | |
| 17 | 3300 | 0,194118 | | | |
| 17 | 3500 | 0,205882 | | | |
| 17 | 5100 | 0,3 | | | |
| 17 | 2100 | 0,123529 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 18 | 4300 | 0,238889 | | | |
| 18 | 2700 | 0,15 | | | |
| 18 | 2800 | 0,155556 | | | |
| 18 | 3000 | 0,166667 | | | |
| 18 | 4200 | 0,233333 | | | |
| 18 | 3900 | 0,216667 | | | |
| 18 | 3800 | 0,211111 | | | |
| 18 | 4600 | 0,255556 | | | |
| 18 | 4200 | 0,233333 | | | |
| 18 | 3800 | 0,211111 | | | |
| 18 | 4700 | 0,261111 | | | |
| 18 | 3100 | 0,172222 | | | |
| 18 | 3000 | 0,166667 | | | |
| 18 | 2400 | 0,133333 | | | |
| 18 | 2600 | 0,144444 | | | |
| 18 | 2400 | 0,133333 | | | |
| 20 | 4200 | 0,21 | | | |
| 20 | 4800 | 0,24 | | | |
| 20 | 3300 | 0,165 | | | |
| 20 | 3300 | 0,165 | | | |
| 20 | 4500 | 0,225 | | | |
| 20 | 4900 | 0,245 | | | |
| 20 | 3300 | 0,165 | | | |
| 20 | 3900 | 0,195 | | | |
| 20 | 4200 | 0,21 | | | |
| 20 | 3800 | 0,19 | | | |
| 20 | 3500 | 0,175 | | | |
| 20 | 2800 | 0,14 | | | |
| 20 | 2800 | 0,14 | | | |
| 22 | 4300 | 0,195455 | | | |
| 22 | 3600 | 0,163636 | | | |
| 22 | 3800 | 0,172727 | | | |
| 22 | 3600 | 0,163636 | | | |
| 22 | 3600 | 0,163636 | | | |
| 22 | 4400 | 0,2 | | | |
| 22 | 3400 | 0,154545 | | | |
| 22 | 4000 | 0,181818 | | | |
| 22 | 4000 | 0,181818 | | | |
| 22 | 4500 | 0,204545 | | | |
| 22 | 4000 | 0,181818 | | | |
| 22 | 3400 | 0,154545 | | | |
| 22 | 3000 | 0,136364 | | | |
| 23 | 4000 | 0,173913 | | | |
| 23 | 4000 | 0,173913 | | | |
| 23 | 2900 | 0,126087 | | | |
| 24 | 4800 | 0,2 | | | |
| 24 | 4800 | 0,2 | | | |
| 24 | 3900 | 0,1625 | | | |
| 24 | 4000 | 0,166667 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 24 | 4500 | 0,1875 | | | |
| 24 | 2600 | 0,108333 | | | |
| 25 | 4550 | 0,182 | | | |
| 25 | 3200 | 0,128 | | | |
| 25 | 3100 | 0,124 | | | |
| 25 | 3000 | 0,12 | | | |
| 25 | 3600 | 0,144 | **Tomato crop** | | |
| 25 | 4300 | 0,172 | **Production in tons** | **Expenses in euros** | **Average field cost per kilo** |
| 25 | 4000 | 0,16 | **1873** | **329260** | **0,18** |
| 25 | 2770 | 0,1108 | | | |
| 25 | 2200 | 0,088 | | | |
| 25 | 2900 | 0,116 | | | |
| 26 | 4200 | 0,161538 | **Potato and Tomato crop** | | |
| | | **0,20** | | | **0,20 Euros per kilo is the average field cost for both crops** |

**2: The average field cost in Euros per kilo of tomato (out door & glasshouse crop)**

| q4 | q5 | results | Out doorl | glasshouse | | | |
|---|---|---|---|---|---|---|---|
| 5,5 | 500 | 0,090909 | 182,5 | | | | |
| 6,5 | 600 | 0,092308 | 22000 | | | | |
| 6,5 | 700 | 0,107692 | 0,120548 | | | | |
| 6 | 750 | 0,125 | | | | | |
| 7 | 750 | 0,107143 | | | | | |
| 7 | 750 | 0,107143 | | | | | |
| 6 | 800 | 0,133333 | | | | | |
| 6 | 800 | 0,133333 | | | | | |
| 7 | 800 | 0,114286 | | | | | |
| 7,5 | 800 | 0,106667 | | | | | |
| 8 | 800 | 0,1 | | | | | |
| 7 | 850 | 0,121429 | | | | | |
| 7 | 850 | 0,121429 | | | | | |
| 7 | 900 | 0,128571 | | | | | |
| 8 | 900 | 0,1125 | | | | | |
| 8 | 900 | 0,1125 | | | | | |
| 9 | 900 | 0,1 | | | | | |
| 8 | 950 | 0,11875 | | | | | |
| 7,5 | 1000 | 0,133333 | | | | | |
| 8 | 1000 | 0,125 | | | | | |
| 7,5 | 1100 | 0,146667 | | | | | |
| 8 | 1100 | 0,1375 | | | | | |
| 9 | 1100 | 0,122222 | | | | | |
| 7 | 1200 | 0,171429 | | | | | |
| 8,5 | 1200 | 0,141176 | | | | | |
| 11 | 1400 | 0,127273 | 1582 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | 1600 | 0,145455 | 290020 | | | | |
| 17 | 2100 | 0,123529 | **0,183325** | | | | |
| 25 | 2200 | 0,088 | | | | | |
| 18 | 2400 | 0,133333 | | | | | |
| 10 | 2500 | 0,25 | | | | | |
| 16 | 2600 | 0,1625 | | | | | |
| 18 | 2600 | 0,144444 | | | | | |
| 24 | 2600 | 0,108333 | | | | | |
| 18 | 2700 | 0,15 | | | | | |
| 25 | 2770 | 0,1108 | | | | | |
| 10 | 2800 | 0,28 | | | | | |
| 18 | 2800 | 0,155556 | | | | | |
| 20 | 2800 | 0,14 | | | | | |
| 20 | 2800 | 0,14 | | | | | |
| 9 | 2900 | 0,322222 | | | | | |
| 16 | 2900 | 0,18125 | | | | | |
| 23 | 2900 | 0,126087 | | | | | |
| 25 | 2900 | 0,116 | | | | | |
| 16 | 3000 | 0,1875 | | | | | |
| 18 | 3000 | 0,166667 | | | | | |
| 18 | 3000 | 0,166667 | | | | | |
| 22 | 3000 | 0,136364 | | | | | |
| 25 | 3000 | 0,12 | | | | | |
| 15 | 3100 | 0,206667 | | | | | |
| 16 | 3100 | 0,19375 | | | | | |
| 18 | 3100 | 0,172222 | | | | | |
| 25 | 3100 | 0,124 | | | | | |
| 25 | 3200 | 0,128 | | | | | |
| 17 | 3300 | 0,194118 | | | | | |
| 20 | 3300 | 0,165 | | | | | |
| 20 | 3300 | 0,165 | | | | | |
| 20 | 3300 | 0,165 | | | | | |
| 22 | 3400 | 0,154545 | | | | | |
| 22 | 3400 | 0,154545 | | | | | |
| 15 | 3500 | 0,233333 | | | | | |
| 17 | 3500 | 0,205882 | | | | | |
| 20 | 3500 | 0,175 | | | | | |
| 22 | 3600 | 0,163636 | | | | | |
| 22 | 3600 | 0,163636 | | | | | |
| 22 | 3600 | 0,163636 | | | | | |
| 25 | 3600 | 0,144 | | | | | |
| 18 | 3800 | 0,211111 | | | | | |
| 18 | 3800 | 0,211111 | | | | | |
| 20 | 3800 | 0,19 | | | | | |
| 22 | 3800 | 0,172727 | | | | | |
| 18 | 3900 | 0,216667 | | | | | |
| 20 | 3900 | 0,195 | | | | | |
| 24 | 3900 | 0,1625 | | | | | |
| 22 | 4000 | 0,181818 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 4000 | 0,181818 | | | | | |
| 22 | 4000 | 0,181818 | | | | | |
| 23 | 4000 | 0,173913 | | | | | |
| 23 | 4000 | 0,173913 | | | | | |
| 24 | 4000 | 0,166667 | | | | | |
| 25 | 4000 | 0,16 | | | | | |
| 18 | 4200 | 0,233333 | | | | | |
| 18 | 4200 | 0,233333 | | | | | |
| 20 | 4200 | 0,21 | | | | | |
| 20 | 4200 | 0,21 | | | | | |
| 26 | 4200 | 0,161538 | | | | | |
| 18 | 4300 | 0,238889 | | | | | |
| 22 | 4300 | 0,195455 | | | | | |
| 25 | 4300 | 0,172 | | | | | |
| 22 | 4400 | 0,2 | | | | | |
| 20 | 4500 | 0,225 | | | | | |
| 22 | 4500 | 0,204545 | | | | | |
| 24 | 4500 | 0,1875 | | | | | |
| 25 | 4550 | 0,182 | | | | | |
| 18 | 4600 | 0,255556 | | | | | |
| 18 | 4700 | 0,261111 | | | | | |
| 20 | 4800 | 0,24 | | | | | |
| 24 | 4800 | 0,2 | | | | | |
| 24 | 4800 | 0,2 | | | | | |
| 16 | 4900 | 0,30625 | | | | | |
| 16 | 4900 | 0,30625 | | | | | |
| 20 | 4900 | 0,245 | | | | | |
| 16 | 5000 | 0,3125 | | | | | |
| 17 | 5100 | 0,3 | | | | | |
| 16 | 6500 | 0,40625 | | | | | |
| | | **0,17** | 0,17 Euros is the field cost per kilos for tomatoes | | | | |

**3: The average field cost in Euros per kilo of potato (2 crops per year)**

| q4 | q5 | results | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 800 | 0,16 | | | | | |
| 5,5 | 900 | 0,163636 | | | | | |
| 5 | 700 | 0,14 | | | | | |
| 6 | 800 | 0,133333 | | | | | |
| 4,5 | 950 | 0,211111 | | | | | |
| 5 | 700 | 0,14 | | | | | |
| 5 | 1000 | 0,2 | | | | | |
| 6 | 850 | 0,141667 | | | | | |
| 6,5 | 800 | 0,123077 | | | | | |
| 6 | 750 | 0,125 | | | | | |
| 5,5 | 650 | 0,118182 | | | | | |
| 4,5 | 650 | 0,144444 | | | | | |
| 5,5 | 780 | 0,141818 | | | | | |
| 6 | 800 | 0,133333 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | 850 | 0,141667 | | | | | |
| 5 | 650 | 0,13 | | | | | |
| 2,5 | 1200 | 0,48 | | | | | |
| 3 | 1100 | 0,366667 | | | | | |
| 3,5 | 1000 | 0,285714 | | | | | |
| 3 | 900 | 0,3 | | | | | |
| 3,5 | 1100 | 0,314286 | | | | | |
| 4 | 1300 | 0,325 | | | | | |
| 2,5 | 900 | 0,36 | | | | | |
| 3,5 | 900 | 0,257143 | | | | | |
| 4 | 950 | 0,2375 | | | | | |
| 4,5 | 1200 | 0,266667 | | | | | |
| 3,5 | 1100 | 0,314286 | | | | | |
| 3 | 900 | 0,3 | | | | | |
| 3,5 | 950 | 0,271429 | | | | | |
| 4 | 950 | 0,2375 | | | | | |
| 3,5 | 800 | 0,228571 | | | | | |
| 4,5 | 1050 | 0,233333 | | | | | |
| 3 | 800 | 0,266667 | | | | | |
| 3,8 | 920 | 0,242105 | | | | | |
| 3,7 | 980 | 0,264865 | | | | | |
| 4 | 850 | 0,2125 | | | | | |
| 4,5 | 930 | 0,206667 | | | | | |
| 4 | 1050 | 0,2625 | | | | | |
| 2,5 | 1220 | 0,488 | | | | | |
| 3 | 1300 | 0,433333 | | | | | |
| 3,5 | 1250 | 0,357143 | | | | | |
| 2,8 | 1000 | 0,357143 | | | | | |
| 3,5 | 1100 | 0,314286 | | | | | |
| 4 | 1250 | 0,3125 | | | | | |
| 3 | 1100 | 0,366667 | | | | | |
| 3 | 1300 | 0,433333 | | | | | |
| 3,7 | 1200 | 0,324324 | | | | | |
| 4 | 1200 | 0,3 | | | | | |
| 3,5 | 1000 | 0,285714 | | | | | |
| 3 | 1000 | 0,333333 | | | | | |
| 3,5 | 900 | 0,257143 | | | | | |
| 4 | 950 | 0,2375 | | | | | |
| 3 | 750 | 0,25 | | | | | |
| 4,5 | 850 | 0,188889 | | | | | |
| 3,5 | 900 | 0,257143 | | | | | |
| 3,3 | 980 | 0,29697 | | | | | |
| 3 | 920 | 0,306667 | | | | | |
| 4,3 | 950 | 0,22093 | | | | | |
| 6 | 670 | 0,111667 | | | | | |
| 4 | 1400 | 0,35 | | | | | |
| 4,5 | 1200 | 0,266667 | | | | | |
| 3,5 | 1300 | 0,371429 | | | | | |
| 4 | 1250 | 0,3125 | | | | | |
| 4,5 | 1350 | 0,3 | | | | | |
| 3,8 | 1100 | 0,289474 | | | | | |
| 4,2 | 1200 | 0,285714 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 670 | 0,134 | | | | | |
| 5 | 640 | 0,128 | | | | | |
| 5,5 | 710 | 0,129091 | | | | | |
| 6 | 820 | 0,136667 | | | | | |
| 5,7 | 730 | 0,12807 | | | | | |
| 4,5 | 760 | 0,168889 | | | | | |
| 5,5 | 700 | 0,127273 | | | | | |
| 5,8 | 750 | 0,12931 | | | | | |
| 6 | 780 | 0,13 | | | | | |
| 6 | 800 | 0,133333 | | | | | |
| 6 | 850 | 0,141667 | | | | | |
| 5,5 | 750 | 0,136364 | | | | | |
| 5 | 800 | 0,16 | | | | | |
| 6 | 800 | 0,133333 | | | | | |
| 4 | 700 | 0,175 | | | | | |
| 5 | 800 | 0,16 | | | | | |
| 5,5 | 900 | 0,163636 | | | | | |
| | | **0,24** | 0,24 Euros is the field cost per kilo for potatoes | | | | |

**4 (Anova analysis): The age of farmers may influence their attitude towards imported products**

There are no conclusions because we do not have sufficient data in all cells

**5 (Anova analysis): The education of farmers may influence their attitude towards imported products**

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Σαν καταναλωτής, θα ήθελα να δοκιμάσω εισαγώμενες τομάτες και πατάτες | Between Groups | .174 | 3 | .058 | .077 | .972 |
| | Within Groups | 147.326 | 196 | .752 | | |
| | Total | 147.500 | 199 | | | |
| Θα τα αγόραζα σε περιόδους που δεν υπάρχει ελληνική παραγωγή | Between Groups | .020 | 3 | .007 | .008 | .999 |
| | Within Groups | 169.335 | 196 | .864 | | |
| | Total | 169.355 | 199 | | | |
| Θα τα αγόραζα ακόμα και σε περιόδους που υπάρχει ελληνική παραγωγή αν ήταν φθηνότερα από τα δικά μας | Between Groups | 2.519 | 3 | .840 | 1.503 | .415 |
| | Within Groups | 109.476 | 196 | .559 | | |
| | Total | 111.995 | 199 | | | |
| Θα τα αγόραζα ακόμα και σε περιόδους που υπάρχει ελληνική παραγωγή αν ήταν καλύτερης ποιότητας | Between Groups | 3.174 | 3 | 1.058 | 1.395 | .046 |
| | Within Groups | 148.701 | 196 | .759 | | |
| | Total | 151.875 | 199 | | | |
| Κυρίως προσπαθώ να αποθηκεύσω από τη δική μου παραγωγή και να καλύψω τα μέγιστά των | Between Groups | 1.503 | 3 | .501 | .434 | .729 |
| | Within Groups | 226.177 | 196 | 1.154 | | |
| | Total | 227.680 | 199 | | | |
| Θα με ενδιέφερε να δοκιμάσω γεωργικά προϊόντα προερχόμενα από την ευρωπαϊκή ένωση | Between Groups | 1.887 | 3 | .629 | .667 | .574 |
| | Within Groups | 184.993 | 196 | .944 | | |
| | Total | 186.880 | 199 | | | |
| Θα με ενδιέφερε να δοκιμάσω γεωργικά προϊόντα προερχόμενα από χώρες εκτός | Between Groups | 1.890 | 3 | .630 | .789 | .502 |
| | Within Groups | 156.590 | 196 | .799 | | |
| | Total | 158.480 | 199 | | | |
| Εμπιστεύμαι τη ποιότητα των αγροτικών προϊόντων των κοινωτικών χωρών | Between Groups | 1.214 | 3 | .405 | .407 | .748 |
| | Within Groups | 194.981 | 196 | .995 | | |
| | Total | 196.195 | 199 | | | |
| Εμπιστεύμαι τη ποιότητα των αγροτικών προϊόντων των μη κοινωτικών χωρών | Between Groups | 2.680 | 3 | .893 | 1.127 | .339 |
| | Within Groups | 155.320 | 196 | .792 | | |
| | Total | 158.000 | 199 | | | |

**Θα τα αγόραζα ακόμα και σε περιόδους που υπάρχει ελληνική παραγωγή αν ήταν καλύτερης ποιότητας από τα δικά μας**

Duncan [a,b]

| Η εκπαίδευσή σας | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| Δημοτικό σχολείο | 40 | 2.17 | |
| Γυμνάσιο | 76 | 2.28 | 2.28 |
| Λύκειο | 81 | 2.42 | 2.42 |
| Πτυχίο πανεπιστημίου | 3 | | 3.00 |
| Sig. | | .550 | .074 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 10.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**6 (Anova analysis): The income of farmers may influence their psychographic features.**

**Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό**

Duncan[a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 10.001 - 20.000 ευρώ | 25 | 3.52 | | |
| 20.001 - 30.000 ευρώ | 83 | 3.72 | 3.72 | |
| 30.001 - 50.000 ευρώ | 70 | | 3.89 | 3.89 |
| Άνω των 50.000 ευρώ | 22 | | | 4.05 |
| Sig. | | .119 | .211 | .219 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό | Between Groups | 4.273 | 3 | 1.424 | 4.739 | .003 |
| | Within Groups | 58.907 | 196 | .301 | | |
| | Total | 63.180 | 199 | | | |
| Προσέχω τη τιμή, ιδίως όταν αγοράζω προϊόντα υψηλής αξίας | Between Groups | 5.790 | 3 | 1.930 | 5.683 | .001 |
| | Within Groups | 66.565 | 196 | .340 | | |
| | Total | 72.355 | 199 | | | |
| Ενδιαφέρομαι να ψάχνω ειδικές προσφορές για τις αγορές μου | Between Groups | 5.365 | 3 | 1.788 | 2.773 | .043 |
| | Within Groups | 126.430 | 196 | .645 | | |
| | Total | 131.795 | 199 | | | |
| Σύχνα ψάχνω για φθηνές τιμές σε εφημερίδες ή αγροτικά περιοδικά | Between Groups | 13.980 | 3 | 4.660 | 8.051 | .000 |
| | Within Groups | 113.440 | 196 | .579 | | |
| | Total | 127.420 | 199 | | | |
| Είμαι εξοικιωμένος με τη χρήση internet για να βρω εναλλακτική αγορά για τα εφόδιά μου | Between Groups | 1.302 | 3 | .434 | .534 | .659 |
| | Within Groups | 159.253 | 196 | .813 | | |
| | Total | 160.555 | 199 | | | |
| Όταν χρησιμοποιώ ακριβούς σπόρους, φάρμακα και λιπάσματα νοιώθω πλήρως | Between Groups | 2.225 | 3 | .742 | 1.359 | .257 |
| | Within Groups | 106.955 | 196 | .546 | | |
| | Total | 109.180 | 199 | | | |
| Αισθάνομαι περήφανος να λέω στους φίλους, ότι αγοράζω ακριβά εφόδια | Between Groups | 5.855 | 3 | 1.952 | 3.081 | .029 |
| | Within Groups | 124.145 | 196 | .633 | | |
| | Total | 130.000 | 199 | | | |
| Ενδιαφέρομαι περισσότερο για να βρω τη καλύτερη σχέση ποιότητας και τιμής για τα εφόδια της | Between Groups | 3.539 | 3 | 1.180 | 2.197 | .090 |
| | Within Groups | 105.241 | 196 | .537 | | |
| | Total | 108.780 | 199 | | | |
| Οι φίλοι μου στο καφενείο μπορεί να με χαρακτηρίσουν τσιγκούνη αν αγοράζω πάντα τα | Between Groups | 6.602 | 3 | 2.201 | 2.887 | .037 |
| | Within Groups | 149.398 | 196 | .762 | | |
| | Total | 156.000 | 199 | | | |
| Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα προληπτικά για να προστατέψω από | Between Groups | .752 | 3 | .251 | .604 | .613 |
| | Within Groups | 81.248 | 196 | .415 | | |
| | Total | 82.000 | 199 | | | |
| Όταν ψωνίζω φθηνά εφόδια πιστεύω πως έκανα έξυπνη αγορά | Between Groups | 12.293 | 3 | 4.098 | 6.361 | .000 |
| | Within Groups | 126.262 | 196 | .644 | | |
| | Total | 138.555 | 199 | | | |
| Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα κατασταλτικά για να προστατέψω από | Between Groups | .908 | 3 | .303 | .319 | .812 |
| | Within Groups | 186.047 | 196 | .949 | | |
| | Total | 186.955 | 199 | | | |

**Προσέχω τη τιμή, ιδίως όταν αγοράζω προϊόντα υψηλής αξίας**

Duncan [a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| 30.001 - 50.000 ευρώ | 70 | 3.77 | |
| 20.001 - 30.000 ευρώ | 83 | 3.84 | |
| Άνω των 50.000 ευρώ | 22 | 3.91 | |
| 10.001 - 20.000 ευρώ | 25 | | 4.32 |
| Sig. | | .351 | 1.000 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Ενδιαφέρομαι να ψάχνω ειδικές προσφορές για τις αγορές μου**

Duncan [a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| 30.001 - 50.000 ευρώ | 70 | 3.23 | |
| 20.001 - 30.000 ευρώ | 83 | 3.41 | 3.41 |
| Άνω των 50.000 ευρώ | 22 | 3.45 | 3.45 |
| 10.001 - 20.000 ευρώ | 25 | | 3.76 |
| Sig. | | .265 | .082 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Σύχνα ψάχνω για φθηνές τιμές σε εφημερίδες ή αγροτικά περιοδικά**

Duncan [a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Άνω των 50.000 ευρώ | 22 | 2.14 | | |
| 30.001 - 50.000 ευρώ | 70 | | 2.67 | |
| 20.001 - 30.000 ευρώ | 83 | | 2.93 | 2.93 |
| 10.001 - 20.000 ευρώ | 25 | | | 3.08 |
| Sig. | | 1.000 | .156 | .398 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Οι φίλοι μου στο καφενείο μπορεί να με χαρακτηρίσουν τσιγκούνη αν αγοράζω πάντα τα φθηνότερα εφόδια**

Duncan[a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| Άνω των 50.000 ευρώ | 22 | 2.27 | |
| 30.001 - 50.000 ευρώ | 70 | 2.54 | |
| 20.001 - 30.000 ευρώ | 83 | 2.61 | 2.61 |
| 10.001 - 20.000 ευρώ | 25 | | 3.00 |
| Sig. | | .120 | 063 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**7 (Crosstabulation): What the correlation of cost per product to the age of farmers.**

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 30.444[a] | 20 | .043 |
| Likelihood Ratio | 31.731 | 20 | .046 |
| Linear-by-Linear Association | 13.310 | 1 | .000 |
| N of Valid Cases | 200 | | |

a. 16 cells (24.3%) have expected count less than 5. The minimum expected count is .02.

**Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? * Η ηλικία σας Crosstabulation**

| | | | Η ηλικία σας | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | Μέχρι 20 ετών | 21 - 30 ετών | 31 - 40 ετών | 41 - 50 ετών | 51 - 60 ετών | |
| Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 0 ως 1000 ευρώ | Count | 0 | 0 | 17 | 36 | 19 | 72 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | .0% | 23.6% | 50.0% | 26.4% | 100.0% |
| | 1001 ως 2000 ευρώ | Count | 1 | 1 | 12 | 19 | 12 | 45 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 2.2% | 2.2% | 26.7% | 42.2% | 26.7% | 100.0% |
| | 2001 ως 3000 ευρώ | Count | 0 | 1 | 8 | 7 | 6 | 22 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | 4.5% | 36.4% | 31.8% | 27.3% | 100.0% |
| | 3001 ως 4000 ευρώ | Count | 0 | 0 | 9 | 19 | 2 | 30 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | .0% | 30.0% | 63.3% | 6.7% | 100.0% |
| | 4001 ως 5000 ευρώ | Count | 0 | 2 | 15 | 9 | 2 | 28 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | 7.1% | 53.6% | 32.1% | 7.1% | 100.0% |
| | Πάνω από 5000 ευρώ | Count | 0 | 0 | 2 | 1 | 0 | 3 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | .0% | 66.7% | 33.3% | .0% | 100.0% |
| Total | | Count | 1 | 4 | 63 | 91 | 41 | 200 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .5% | 2.0% | 31.5% | 45.5% | 20.5% | 100.0% |

## 8 (Crosstabulation): What the correlation of cost per product to the income of farmers.

**ι συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? * Καθαρό ετήσιο εισόδημα, σύμφωνα με τη συνολική γεωργική σας δραστηριό Crosstabulation**

| | | | αθαρό ετήσιο εισόδημα, σύμφωνα με τη συνολική γεωργική σα δραστηριότητα | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | 10.001 - 20.000 ευρώ | 20.001 - 30.000 ευρώ | 30.001 - 50.000 ευρώ | Άνω των 50.000 ευρώ | |
| Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 0 ως 1000 ευρώ | Count | 12 | 32 | 22 | 6 | 72 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 16.7% | 44.4% | 30.6% | 8.3% | 100.0% |
| | 1001 ως 2000 ευρώ | Count | 4 | 18 | 19 | 4 | 45 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 8.9% | 40.0% | 42.2% | 8.9% | 100.0% |
| | 2001 ως 3000 ευρώ | Count | 5 | 9 | 4 | 4 | 22 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 22.7% | 40.9% | 18.2% | 18.2% | 100.0% |
| | 3001 ως 4000 ευρώ | Count | 3 | 17 | 7 | 3 | 30 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 10.0% | 56.7% | 23.3% | 10.0% | 100.0% |
| | 4001 ως 5000 ευρώ | Count | 1 | 6 | 16 | 5 | 28 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 3.6% | 21.4% | 57.1% | 17.9% | 100.0% |
| | Πάνω από 5000 ευρώ | Count | 0 | 1 | 2 | 0 | 3 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | .0% | 33.3% | 66.7% | .0% | 100.0% |
| Total | | Count | 25 | 83 | 70 | 22 | 200 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 12.5% | 41.5% | 35.0% | 11.0% | 100.0% |

**Chi-Square Tests**

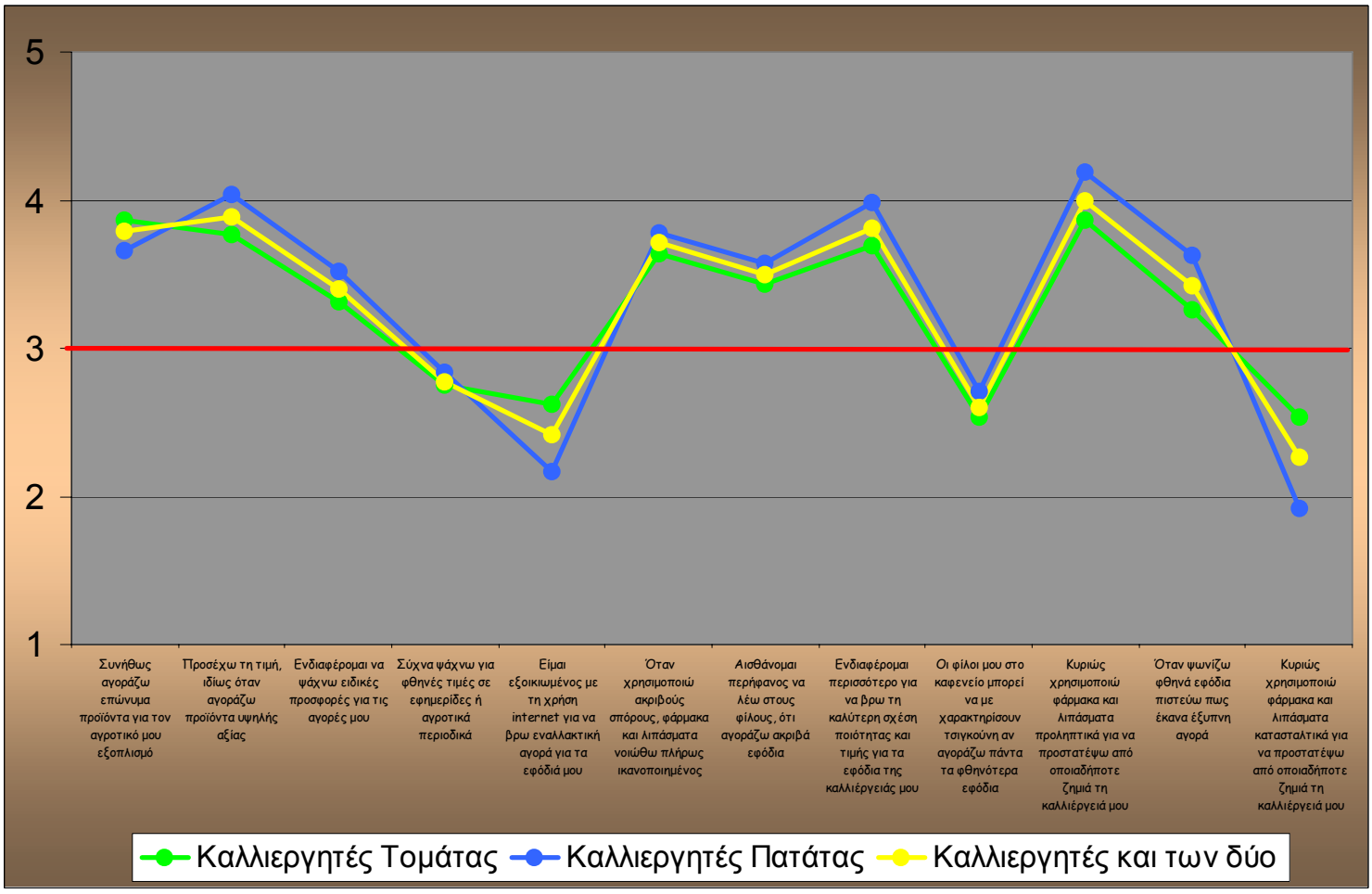
| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 22.264[a] | 15 | .049 |
| Likelihood Ratio | 23.094 | 15 | .082 |
| Linear-by-Linear Association | 5.053 | 1 | .025 |
| N of Valid Cases | 200 | | |

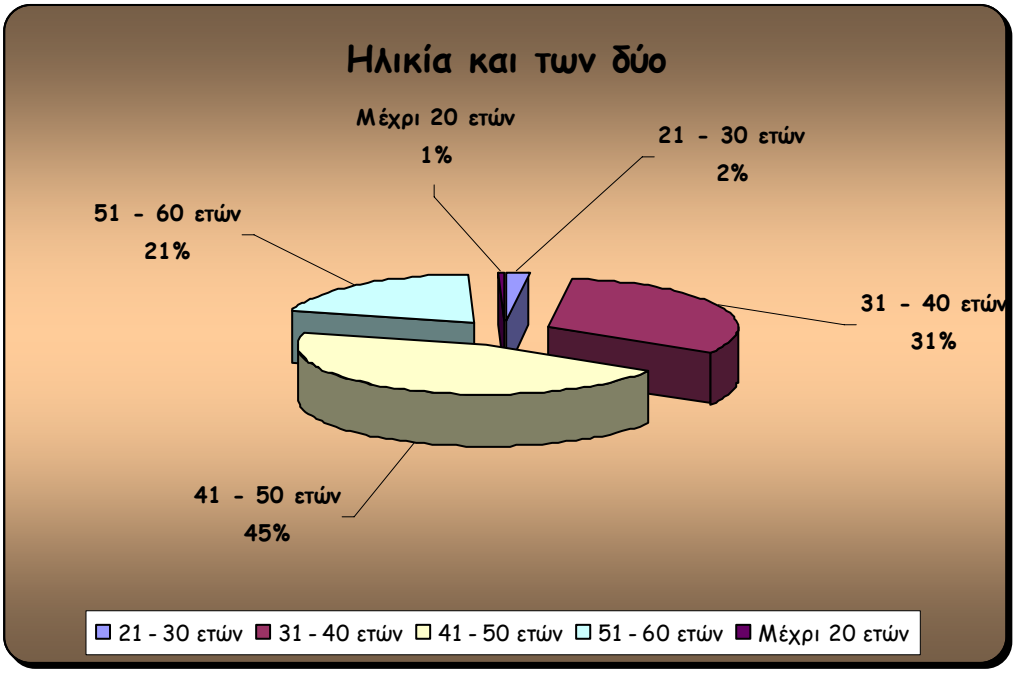
a. 11 cells (24.8%) have expected count less than 5. The minimum expected count is .33.

**9: What the correlation of age and psychographic features.**

**1 =Totally disagree, 2 = Disagree, 3 = Neither disagree/nor agree, 4 = Agree,**

**5 = Totally agree**



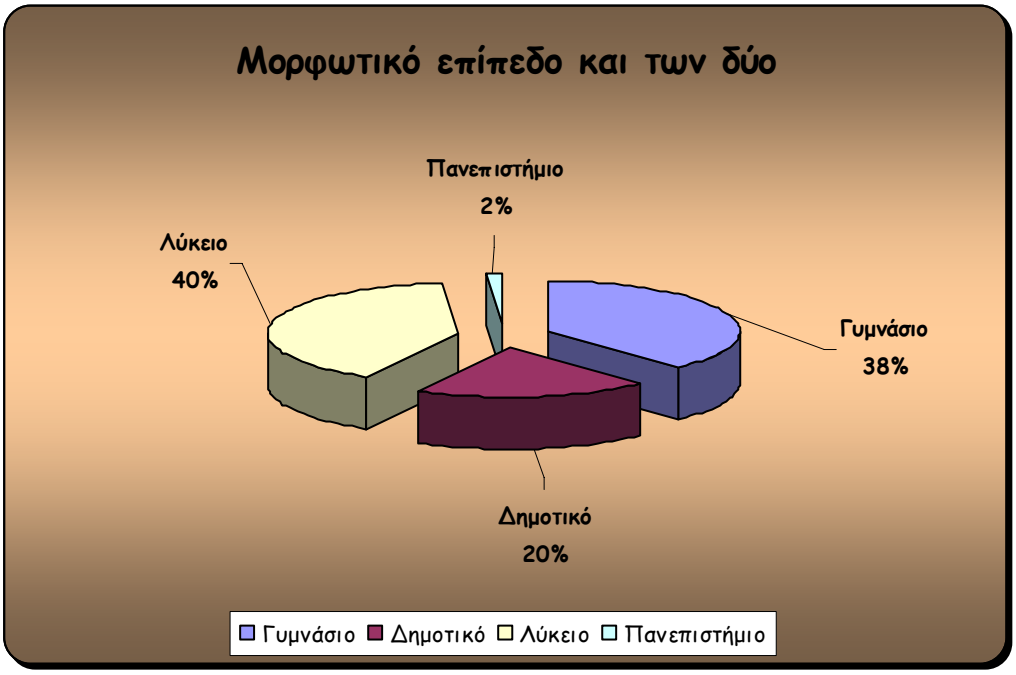



**10 (Anova analysis): What the Correlation of educational level and psychographic features.**

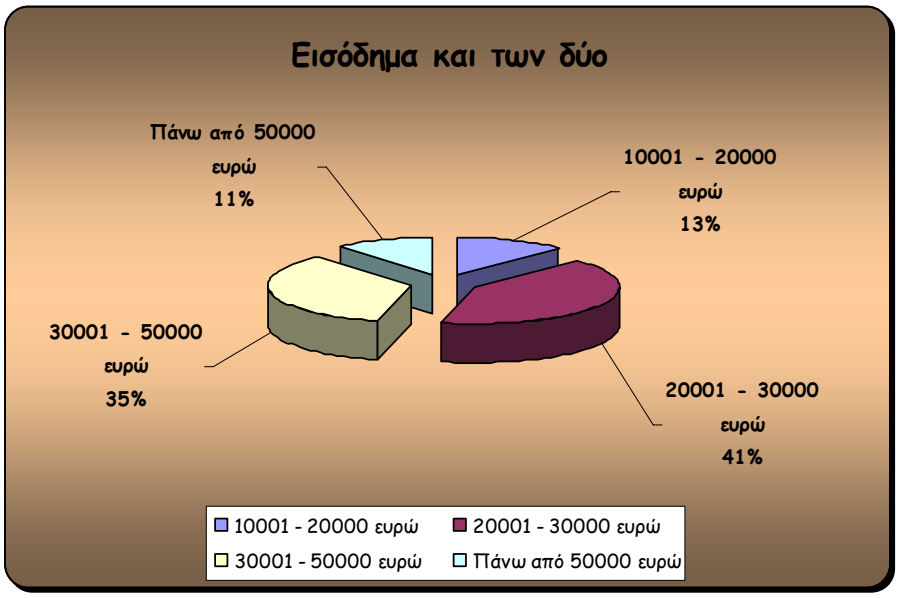
**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό | Between Groups | 1.337 | 3 | .446 | 1.412 | .240 |
| | Within Groups | 61.843 | 196 | .316 | | |
| | Total | 63.180 | 199 | | | |
| Προσέχω τη τιμή, ιδίως όταν αγοράζω προϊόντα υψηλής αξίας | Between Groups | 1.832 | 3 | .611 | 1.697 | .169 |
| | Within Groups | 70.523 | 196 | .360 | | |
| | Total | 72.355 | 199 | | | |
| Ενδιαφέρομαι να ψάχνω ειδικές προσφορές για τις αγορές μου | Between Groups | 1.191 | 3 | .397 | .596 | .618 |
| | Within Groups | 130.604 | 196 | .666 | | |
| | Total | 131.795 | 199 | | | |
| Σύχνα ψάχνω για φθηνές τιμές σε εφημερίδες ή αγροτικά περιοδικά | Between Groups | 4.832 | 3 | 1.611 | 2.575 | .055 |
| | Within Groups | 122.588 | 196 | .625 | | |
| | Total | 127.420 | 199 | | | |
| Είμαι εξοικιωμένος με τη χρήση internet για να βρω εναλλακτική αγορά για τα εφόδιά μου | Between Groups | 10.932 | 3 | 3.644 | 4.774 | .003 |
| | Within Groups | 149.623 | 196 | .763 | | |
| | Total | 160.555 | 199 | | | |
| Όταν χρησιμοποιώ ακριβούς σπόρους, φάρμακα και λιπάσματα γενικά πλήρως | Between Groups | .704 | 3 | .235 | .424 | .736 |
| | Within Groups | 108.476 | 196 | .553 | | |
| | Total | 109.180 | 199 | | | |
| Αισθάνομαι περήφανος να λέω στους φίλους, ότι αγοράζω ακριβά εφόδια | Between Groups | .473 | 3 | .158 | .238 | .869 |
| | Within Groups | 129.527 | 196 | .661 | | |
| | Total | 130.000 | 199 | | | |
| Ενδιαφέρομαι περισσότερο για να βρω τη καλύτερη σχέση ποιότητας και τιμής για τα εφόδια της | Between Groups | 1.256 | 3 | .419 | .763 | .516 |
| | Within Groups | 107.524 | 196 | .549 | | |
| | Total | 108.780 | 199 | | | |
| Οι φίλοι μου στο καφενείο μπορεί να με χαρακτηρίσουν τσιγκούνη αν αγοράζω πάντα τα | Between Groups | 1.733 | 3 | .578 | .734 | .533 |
| | Within Groups | 154.267 | 196 | .787 | | |
| | Total | 156.000 | 199 | | | |
| Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα προληπτικά για να προστατέψω από | Between Groups | .552 | 3 | .184 | .443 | .723 |
| | Within Groups | 81.448 | 196 | .416 | | |
| | Total | 82.000 | 199 | | | |
| Όταν ψωνίζω φθηνά εφόδια πιστεύω πως έκανα έξυπνη αγορά | Between Groups | 1.704 | 3 | .568 | .814 | .488 |
| | Within Groups | 136.851 | 196 | .698 | | |
| | Total | 138.555 | 199 | | | |
| Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα κατασταλτικά για να προστατέψω από | Between Groups | 1.948 | 3 | .649 | .688 | .560 |
| | Within Groups | 185.007 | 196 | .944 | | |
| | Total | 186.955 | 199 | | | |

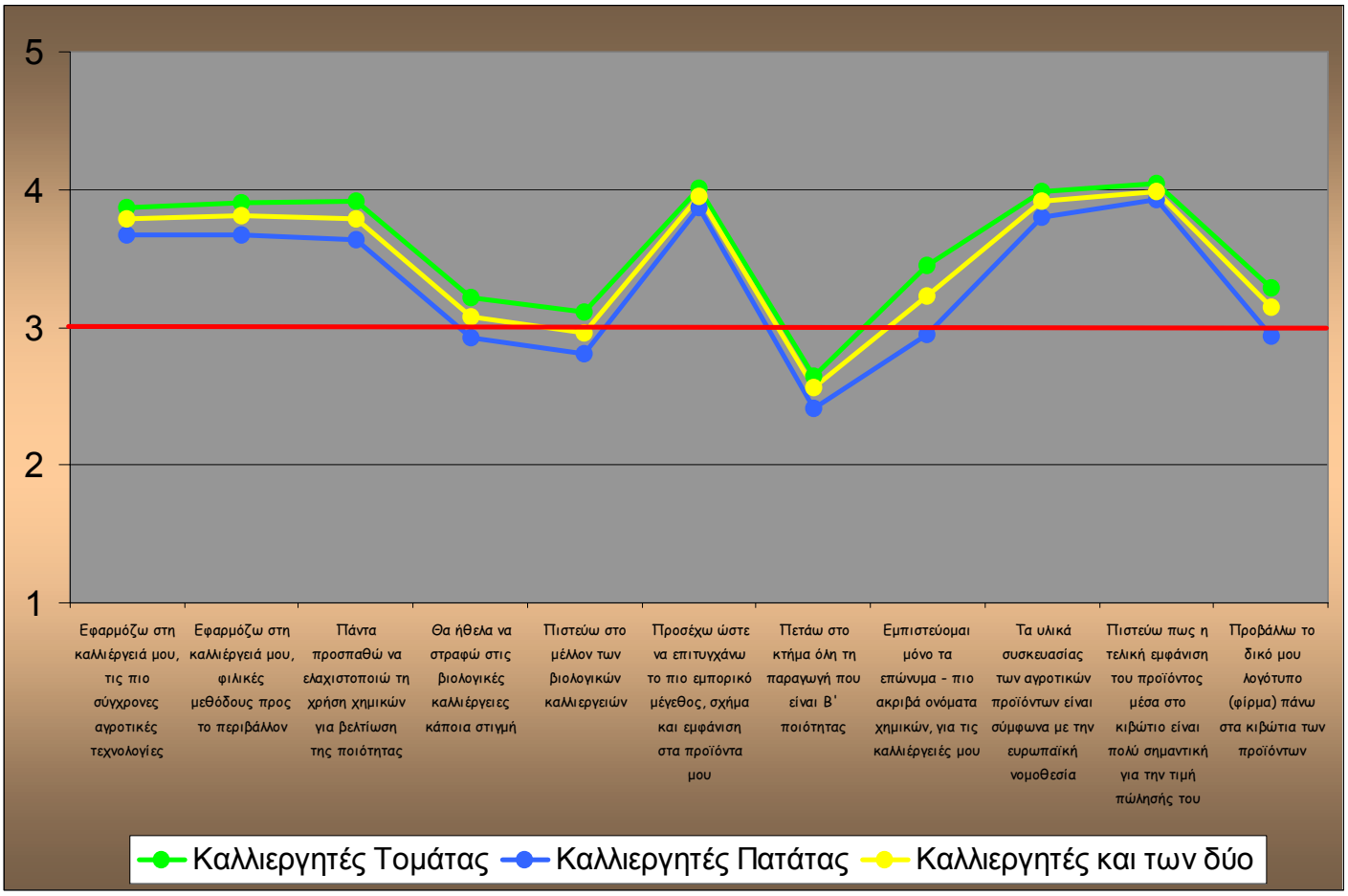
**11: Is there any approval of biological crops according to income, age and education?**



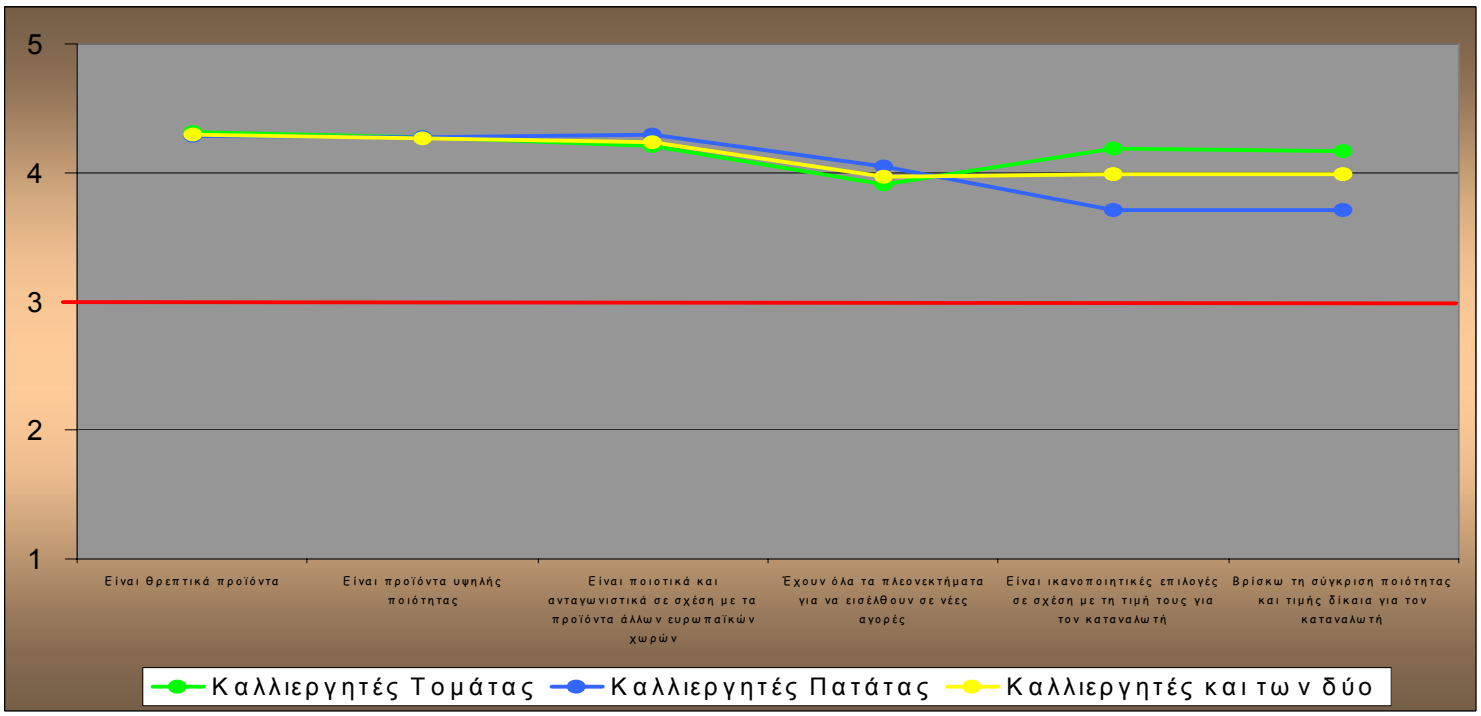

**12: Selection of famous brands of fertilizers and seeds is based on the educational level and income of farmers.**



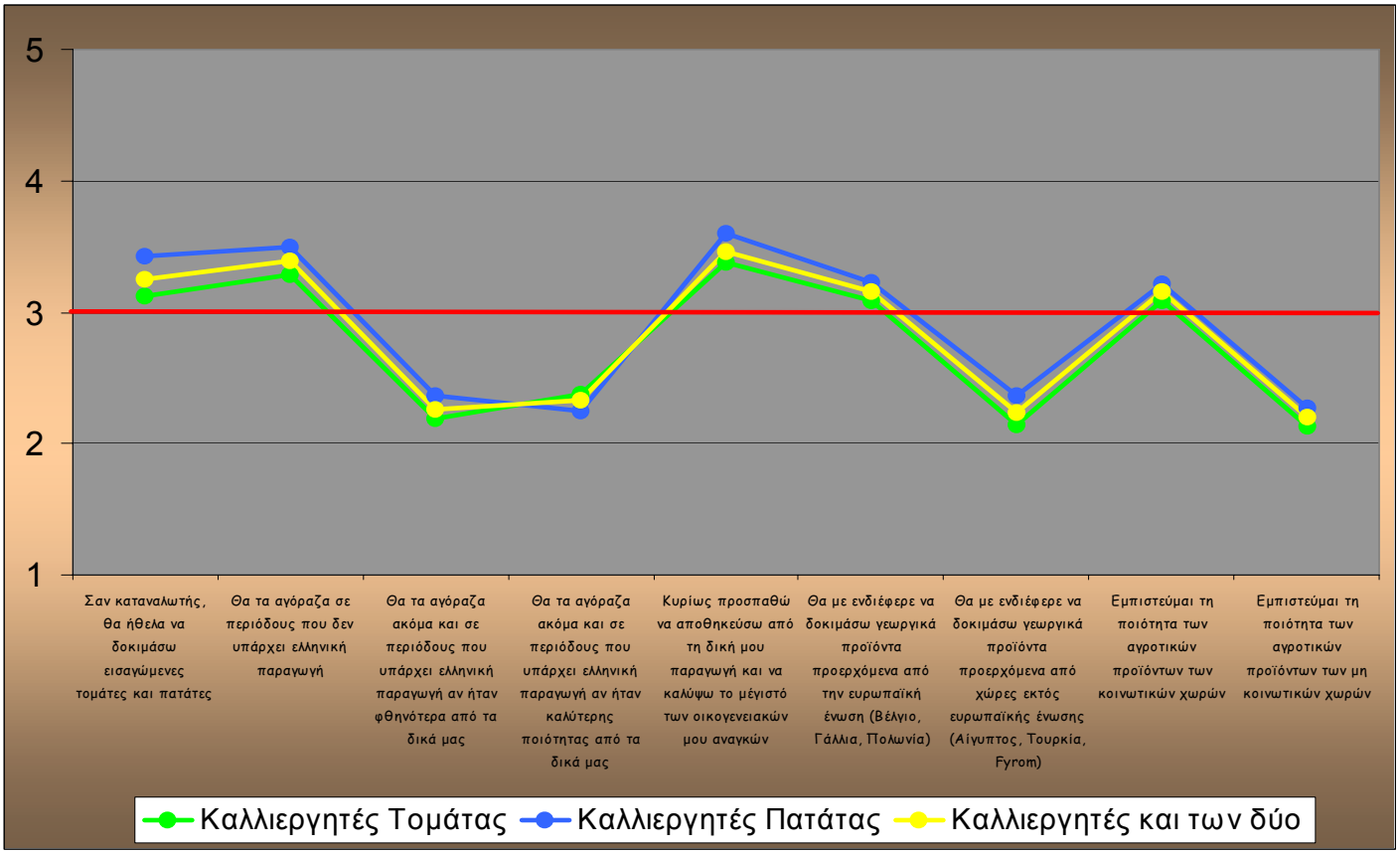
**13: Reliability of Greek production (value for money choice), depends on education, age and income of farmers.**



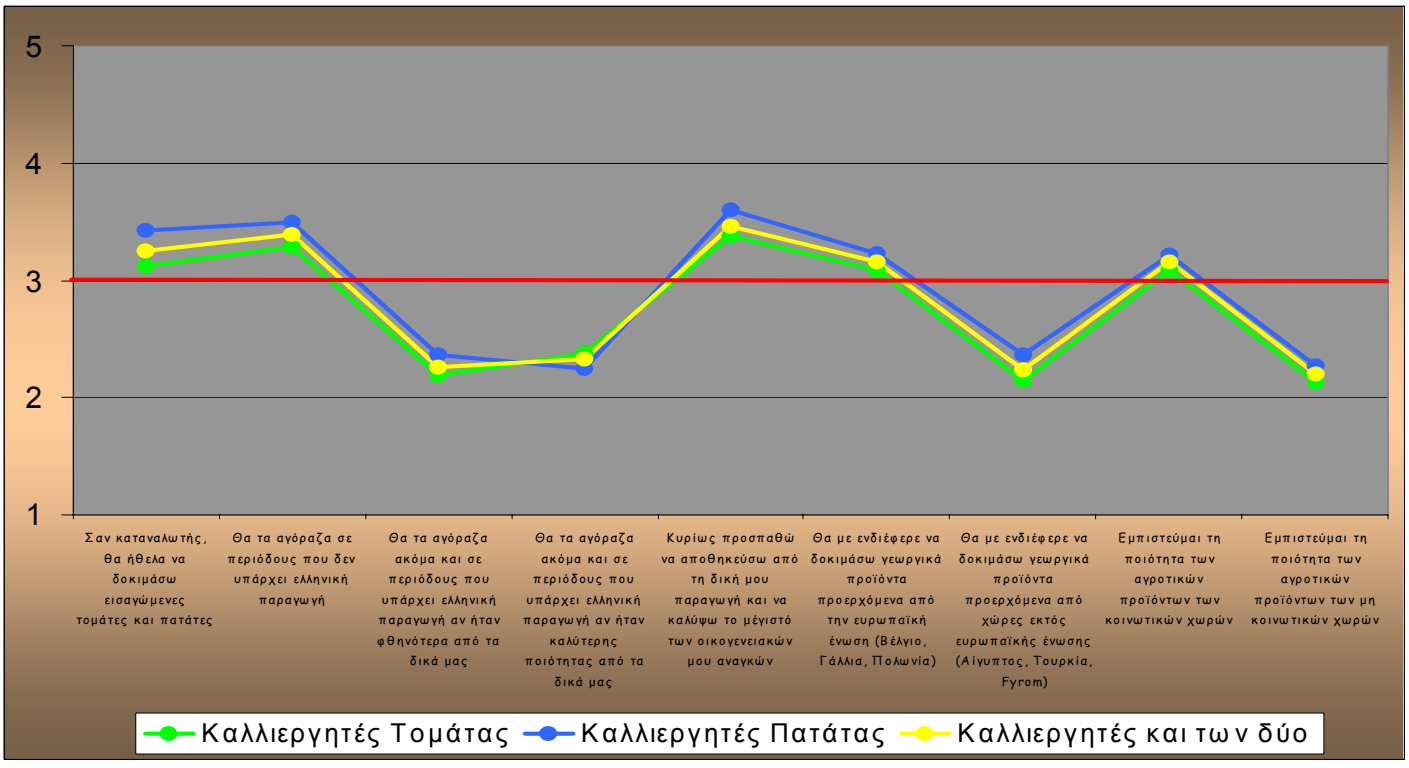

**14: The perception of quality (Greek production) depends on the educational level of farmers.**



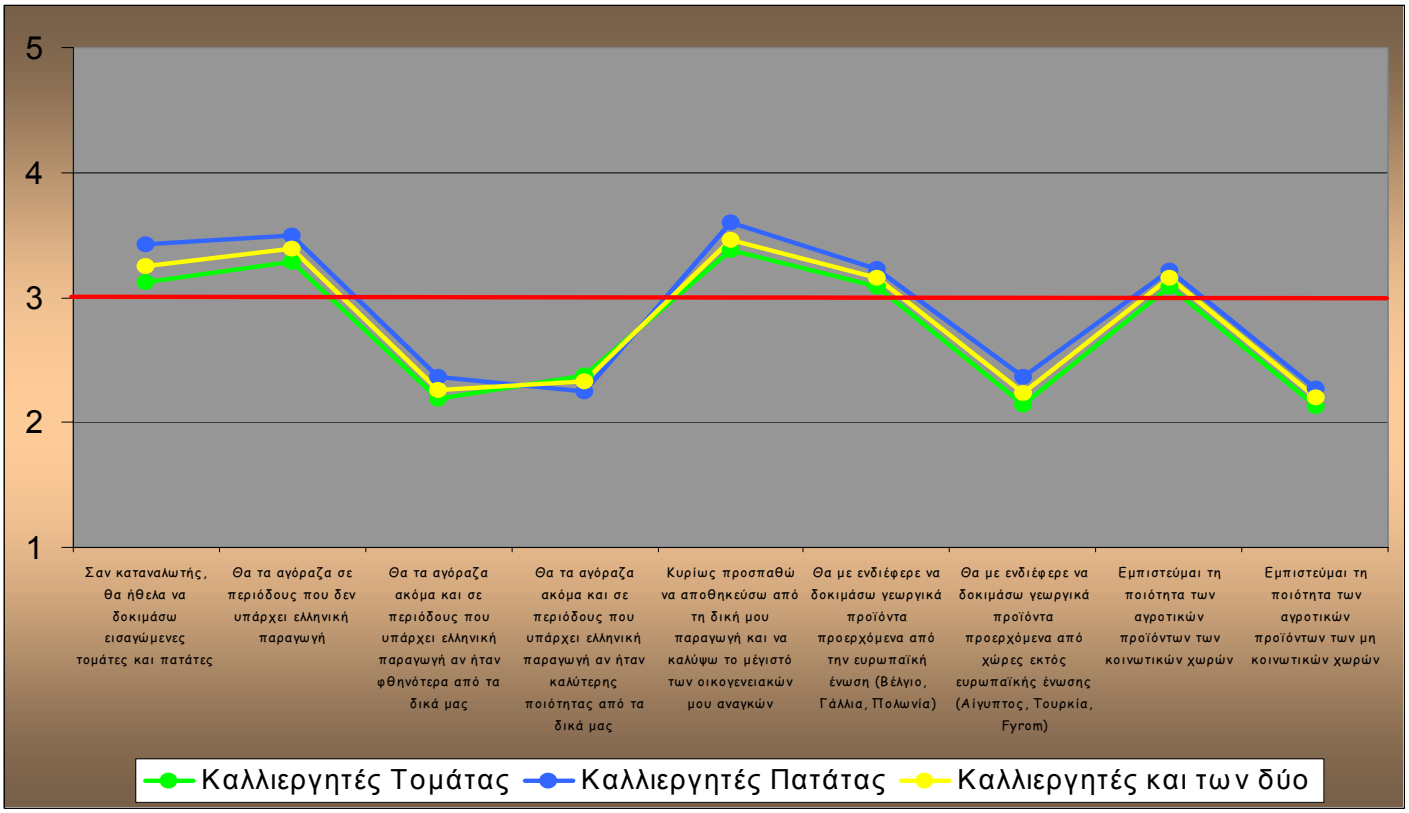
**15: The education and age may influence farmers' decision to storehouse own production for future needs.**




**16: The perception of Greek farmers regarding to European Union imported products, accordingly to their education and their age.**



**17: The perception of Greek farmers regarding to non European Union imported products, accordingly to their education and their age.**




**18 (Anova analysis): The miserliness of farmers' in brands depends on their income and cultivated surface of land.**

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό | Between Groups | 4.273 | 3 | 1.424 | 4.739 | .003 |
| | Within Groups | 58.907 | 196 | .301 | | |
| | Total | 63.180 | 199 | | | |
| Προσέχω τη τιμή, ιδίως όταν αγοράζω προϊόντα υψηλής αξίας | Between Groups | 5.790 | 3 | 1.930 | 5.683 | .001 |
| | Within Groups | 66.565 | 196 | .340 | | |
| | Total | 72.355 | 199 | | | |
| Ενδιαφέρομαι να ψάχνω ειδικές προσφορές για τις αγορές μου | Between Groups | 5.365 | 3 | 1.788 | 2.773 | .043 |
| | Within Groups | 126.430 | 196 | .645 | | |
| | Total | 131.795 | 199 | | | |
| Σύχνα ψάχνω για φθηνές τιμές σε εφημερίδες ή αγροτικά περιοδικά | Between Groups | 13.980 | 3 | 4.660 | 8.051 | .000 |
| | Within Groups | 113.440 | 196 | .579 | | |
| | Total | 127.420 | 199 | | | |

**Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό**

Duncan[a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 10.001 - 20.000 ευρώ | 25 | 3.02 | | |
| 20.001 - 30.000 ευρώ | 83 | 3.72 | 3.72 | |
| 30.001 - 50.000 ευρώ | 70 | | 3.89 | 3.89 |
| Άνω των 50.000 ευρώ | 22 | | | 4.05 |
| Sig. | | .119 | .211 | .219 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Ενδιαφέρομαι να ψάχνω ειδικές προσφορές για τις αγορές μου**

Duncan[a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| 30.001 - 50.000 ευρώ | 70 | 3.23 | |
| 20.001 - 30.000 ευρώ | 83 | 3.41 | 3.41 |
| Άνω των 50.000 ευρώ | 22 | 3.45 | 3.45 |
| 10.001 - 20.000 ευρώ | 25 | | 3.76 |
| Sig. | | .265 | .082 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Σύχνα ψάχνω για φθηνές τιμές σε εφημερίδες ή αγροτικά περιοδικά**

Duncan[a,b]

| Καθαρό ετήσιο εισόδημα, σύμφωνα με | N | Subset for alpha = .05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Άνω των 50.000 ευρώ | 22 | 2.14 | | |
| 30.001 - 50.000 ευρώ | 70 | | 2.67 | |
| 20.001 - 30.000 ευρώ | 83 | | 2.93 | 2.93 |
| 10.001 - 20.000 ευρώ | 25 | | | 3.08 |
| Sig. | | 1.000 | .156 | .398 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 35.782.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**19 (Anova analysis): The precautionary use of chemicals depends on the cultivated surface of land.**

**ANOVA**

Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα προληπτικά για να προστατέψω από οποιαδήποτε ζημιά τη καλλιέργειά μου

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.434 | 2 | .717 | 1.753 | .048 |
| Within Groups | 80.566 | 197 | .409 | | |
| Total | 82.000 | 199 | | | |

**Κυριώς χρησιμοποιώ φάρμακα και λιπάσματα προληπτικά για να προστατέψω από οποιαδήποτε ζημιά τη καλλιέργειά μου**

Duncan [a,b]

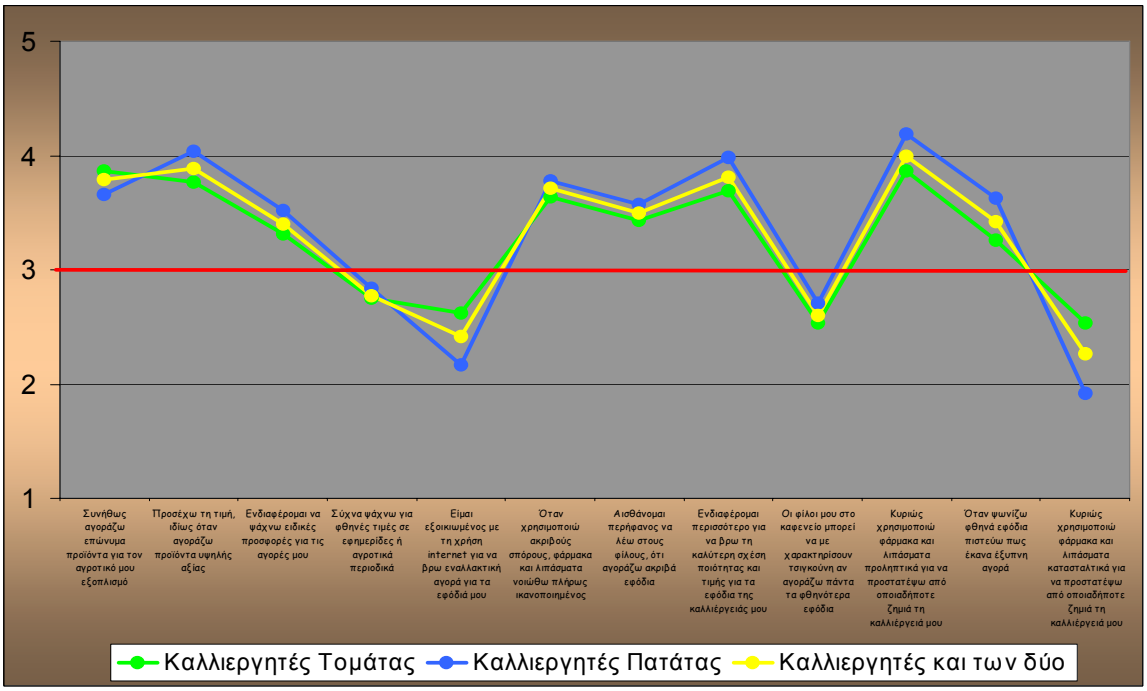
| Σε πόσα στρέμματα καλλιεργείτε το προϊόν | N | Subset for alpha = .05 | |
|---|---|---|---|
| | | 1 | 2 |
| 10-20 στρέμματα | 84 | 3.04 | |
| 21-50 στρέμματα | 94 | 4.00 | 4.00 |
| Πάνω απο 50 στρέμματα | 22 | | 4.23 |
| Sig. | | .662 | .097 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 44.119.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**20: The precautionary use of chemicals is related to the production cost (according to hypotheses 1 & 2 above).**



**21 (Correlation): The approval of biological (organic) crops is related to the selection of branded agricultural equipment.**

| Correlations | | | | |
|---|---|---|---|---|
| | | Θα ήθελα να στραφώ στις βιολογικές καλλιέργειες κάποια στιγμή | Πιστεύω στο μέλλον των βιολογικών καλλιεργειών | 15,1 Συνήθως αγοράζω επώνυμα προϊόντα για τον αγροτικό μου εξοπλισμό |
| 12.4 Θα ήθελα να στραφώ στις βιολογικές καλλιέργειες κάποια στιγμή | Pearson Correlation | | | 0.149 |
| | Sig. (2-tailed) | | | 0.035 |
| | N | | | 200 |
| 12,5 Πιστεύω στο μέλλον των βιολογικών καλλιεργειών | Pearson Correlation | | | 0.158 |
| | Sig. (2-tailed) | | | 0.025 |
| | N | | | 200 |

**22 (Anova analysis): Knowledge and use of internet may reduce the production cost.**

**ANOVA**

Είμαι εξοικιωμένος με τη χρήση internet για να βρω εναλλακτική αγορά για τα εφόδιά μο

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 19.373 | 5 | 3.875 | 5.324 | .000 |
| Within Groups | 141.182 | 194 | .728 | | |
| Total | 160.555 | 199 | | | |

**Είμαι εξοικιωμένος με τη χρήση internet για να βρω εναλλακτική αγορά για τα εφόδιά μου**

Duncan [a,b]

| Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά | N | Subset for alpha = .05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 1001 ως 2000 ευρώ | 45 | 2.07 | | |
| 0 ως 1000 ευρώ | 72 | 2.22 | 2.22 | |
| 4001 ως 5000 ευρώ | 28 | 2.68 | 2.68 | 2.68 |
| 2001 ως 3000 ευρώ | 22 | 2.73 | 2.73 | 2.73 |
| 3001 ως 4000 ευρώ | 30 | | 2.87 | 2.87 |
| Πάνω από 5000 ευρώ | 3 | | | 3.00 |
| Sig. | | .079 | .087 | .400 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 12.398.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**23 (Crosstabulation): The production cost is differentiated according to the cultivated land**

**Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? * Σε πόσα στρέμματα καλλιεργείτε το προϊόν σας? Crosstabulation**

| | | | Σε πόσα στρέμματα καλλιεργείτε το προϊόν σας? | | | |
|---|---|---|---|---|---|---|
| | | | 10-20 στρέμματα | 21-50 στρέμματα | Πάνω απο 50 στρέμματα | Total |
| Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 0 ως 1000 ευρώ | Count | 27 | 33 | 12 | 72 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 37.5% | 45.8% | 16.7% | 100.0% |
| | 1001 ως 2000 ευρώ | Count | 15 | 23 | 7 | 45 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 33.3% | 51.1% | 15.6% | 100.0% |
| | 2001 ως 3000 ευρώ | Count | 13 | 7 | 2 | 22 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 59.1% | 31.8% | 9.1% | 100.0% |
| | 3001 ως 4000 ευρώ | Count | 14 | 15 | 1 | 30 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 46.7% | 50.0% | 3.3% | 100.0% |
| | 4001 ως 5000 ευρώ | Count | 12 | 16 | 0 | 28 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 42.9% | 57.1% | .0% | 100.0% |
| | Πάνω από 5000 ευρώ | Count | 3 | 0 | 0 | 3 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 100.0% | .0% | .0% | 100.0% |
| Total | | Count | 84 | 94 | 22 | 200 |
| | | % within Πόσα συνολικά έξοδα κάνετε μέσο όρο ανά στρέμμα καλλιέργειας? | 42.0% | 47.0% | 11.0% | 100.0% |

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 16.624[a] | 10 | .043 |
| Likelihood Ratio | 20.983 | 10 | .021 |
| Linear-by-Linear Association | 6.909 | 1 | .009 |
| N of Valid Cases | 200 | | |

a. 7 cells (24.9%) have expected count less than 5. The minimum expected count is .33.

## CHAPTER 9: ACKNOWLEDGEMENTS

At the end of this project, I realised that all learning outcomes have been satisfied. These are knowledge, research and development capability, ethical understanding, analysis and synthesis, self appraisal – reflection on practice, planning – management of learning, evaluation, awareness of operational context and application of learning, use of resources, communications skills, responsibility and leadership.

So my personal improvement was on the learning outcomes below:

A1, A2, A3, B1, B2, B3, B4, C1, C2, C3, C4.